

OS/2

A G A Z I N E

Reviews:

Tape Backup Solutions

CEnvr

FIRST LOOK

OS/2

Warp 3

Easy Install

Built-in Internet

Runs in 4MB

Improved Workplace Shell

Enhanced Applets

Supports Win32S

But does it live up to IBM's *hype*?

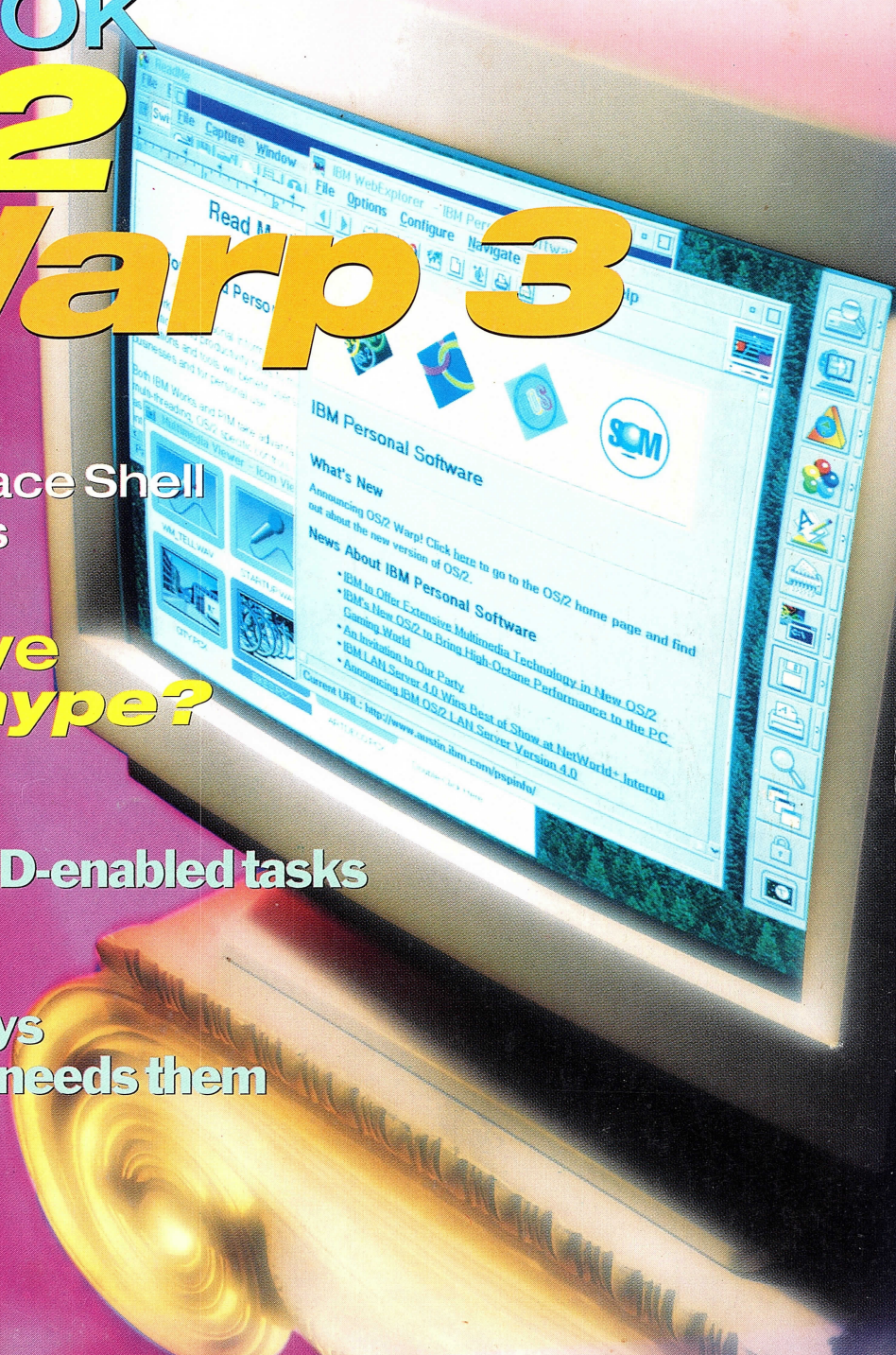
Empowering CID

Using CID for non-CID-enabled tasks

RAIDing OS/2

Redundant disk arrays

and why your server needs them

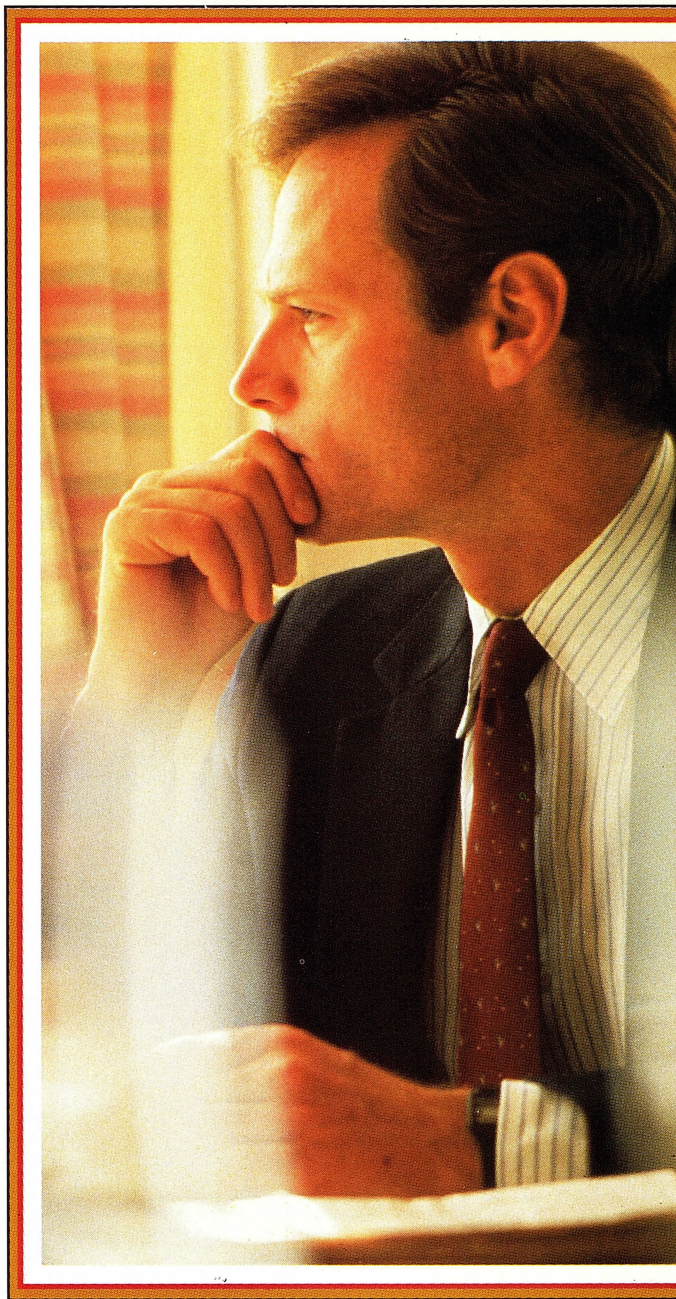


3.95 US/\$4.95 Canada



Miller Freeman Publication

When I Purchase IBM Software, Am I Getting The VALU I Deserve?



VALU—IBM's Volume Additional License Usage program—is the preferred method for Fortune 2000 customers to procure IBM software licenses. VALU offers substantial discounts for additional licenses on OS/2, Communications Manager/2, DB2/2, TCP/IP and many more of IBM's software products. As a VALU customer, you'll receive special promotional offers on products like OS/2 and Lotus SmartSuite for OS/2.

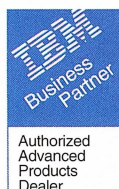
By signing a two-year VALU agreement with IBM, you'll be eligible to receive discounts of up to 65% off software list prices. In addition, you'll get price protection for two years and have the flexibility to pay for software after it's installed, rather than before.

Whether you need 100 or 10,000 additional software licenses, VALU is the right program for your business.

The Future Now is a national organization of over 30 local offices designed to meet the specific needs of today's businesses. Our experts at systems architecture, project management, and connectivity. Through solutions like OS/2 Warp version 3, LAN Server 4.0 and other IBM software products, we help business both streamline and upgrade information systems. In short, our mission is to provide optimum information solutions to give your business the competitive edge.

**Call the Future Now today at 1-800-313-8223
for the nearest national location and start getting
the VALU in IBM software that you deserve.**

The FUTURE NOW
The Premier Business Solution Specialist



ATTENTION OS/2 USERS

OS/2 PRODUCT EXHIBITION

PRODUCT TEST
DRIVE AREAS

80+HANDS-ON CLASSES



CONFERENCE & EXHIBITION

INDUSTRY KEYNOTES

OS/2 AND LAN
CERTIFICATION TESTING

JULY 18-21, 1995 • HYNES CONVENTION CENTER • BOSTON, MA

FOR IMMEDIATE INFORMATION CALL

★ (415) 905-2354

EMAIL: OS/2WORLD@MFI.COM



MAIL TO: OS/2 WORLD CONFERENCE & EXHIBITION
600 HARRISON STREET • SAN FRANCISCO, CA 94107
Reader Service No. 45

FAX THIS FORM TO (415) 905-2220

YES!

I WANT MORE INFORMATION ON
OS/2 WORLD CONFERENCE & EXHIBITION

I'M INTERESTED IN ☐ ATTENDING ☐ EXHIBITING

NAME

ADDRESS

CITY

STATE

ZIP

PHONE

FAX

EMAIL ADDRESS

OS/2

OS/2 Vendor Council

OS/2
Vendor Council

"Growing the market for OS/2 and related products."

These products are certified for use with OS/2

EGGHEAD SOFTWARE
North America's Software Eggsperts.

1-800-EGGHEAD

PROVANTAGE
1-800-336-1166

Window Washer and Open Shutter by One Up Corporation

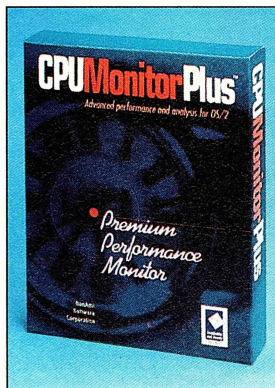
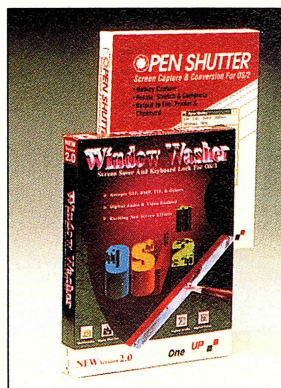
Window Washer is a screen saver for OS/2 which provides password protection and Full Screen keyboard monitoring. Version 2.0 features many exciting effects, digital audio and video. Open Shutter is a screen capture utility that allows users to capture desktop images, modify, then output to a printer, clipboard or a variety of file formats.

INDELIBLE BLUE
Inc.

1-800-776-8284

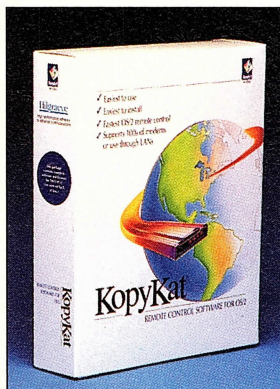
MicroWAREHOUSE

1-800-367-7080



CPU Monitor Plus by BonAr

CPU Monitor Plus is your professional Performance Monitor and Analysis package. Display real-time CPU, RAM, Disk, Interrupt and COM port activity. Diagnose poor running systems. Start, stop and suspend programs. Set execution priorities. Over 100 different metrics, ratios and more.

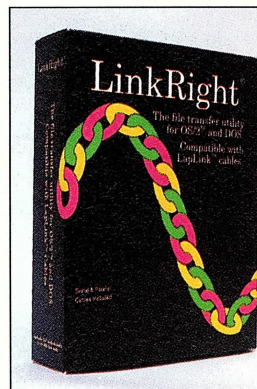


KopyKat by Hilgraeve

KopyKat is a graphical OS/2 remote control solution. You can display the entire desktop of a remote OS/2 system in a window on your OS/2 system. Do anything remotely, that you can do locally. KopyKat supports 200+ modems by name and any Netbios compatible network.

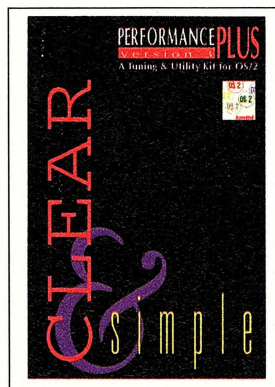
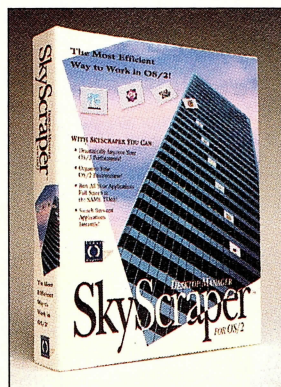
LinkRight by Rightware

LinkRight is a parallel port and serial port file transfer utility made especially for OS/2. The package includes a PM version, an OS/2 command line version, and a DOS version. Maintain EA's and long file names. Supports HPFS and FAT files. CRC checking to insure accurate transfers. Compatible with LapLink cables.



SkyScraper™, Desktop manager for OS/2 by Binar

Now you can realize the full power of OS/2 with SkyScraper™, Desktop Manager for OS/2. Switch between your open applications instantly, run all of your applications full screen at the same time, and launch programs and DOS or OS/2 text sessions with our Program Launcher. With SkyScraper you can completely customize your OS/2 environment!



Performance PLUS V3 by Clear & Simple

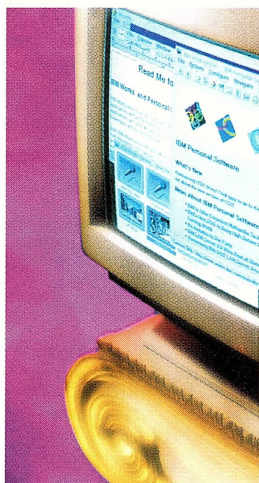
A Tuning and Utilities Kit for OS/2. Simplified graphic interface brings power tuning to *all users*. Now tunes DOS/Win apps with clear settings descriptions. New utilities simplify bitmap viewing, and automate file & Desktop backup. New GUI swap monitor; boot disk or partition; and more. Make your OS/2 system run snappy!

Call (415) 491-1565 for more information on the Vendor Council.

Table of Contents



Volume Two Number One
January 1995



Cover Story

24 Inside OS/2 Warp 3.0

They say that first impressions are the most accurate. Maybe not, but they're still pretty important. Here are our first impressions of the latest version of OS/2. Designed to run in 4MB RAM, targeted at Windows owners, supposedly easier to install, and bundled with Internet connectivity tools and light-weight applications software, OS/2 Warp 3.0 is arguably the best PC operating system available today. But how well does it compare to its own hyperbole?

By Brian Proffit

Features

33 Breaking the 80/20 Rule with CID

OS/2's configuration, installation, and distribution (CID) capabilities make large-site maintenance of OS/2 PCs easier than the alternative—running around with boxes full of floppies. They're great for manipulating CID-enabled software, but how can you use CID for non-enabled tasks, such as partitioning disks or editing text files? Here's how! *By Rob Coventry*

38 RAIDing OS/2

Three years ago, it seemed nobody had heard of RAID. Today, redundant arrays of inexpensive disks are popping up on network servers everywhere. Let's take a look at RAID, what it means in an OS/2 environment, and where to find RAID hardware and software. *By Rick Cook*

Departments

7 Perspectives

Our question is, what does "Warp" really mean, literally and figuratively, to the OS/2 community?

9 Letters

11 Dateline: OS/2

On October 11, 1994, IBM announced OS/2 Warp 3.0 in grand Star Trek-inspired style, attempting to capitalize on both the Internet and science-fiction popularity.

51 Just Announced

The latest news about the latest OS/2 hardware and software.

Review

44 Tape Backup Under OS/2

This month, we examine OS/2 tape solutions: Colorado Trakker, Iomega Tape 250, MSR's Backmaster, NovaStor's NovaBack, Parallel Storage Solution's PSS-1000, PCX's BackupWiz, Symantek's Fastback Plus, and Sytron's Sytos Premium. *By Lenny Bailes*

Columns

15 The Big Picture

Amy Wohl looks at how the definition of "interoperability" has changed over the past decade and points out that our goal should be application and data "transparency."

17 The View from Canopus

When you examine Windows 95's underlying architecture, compared with that of OS/2 Warp, it's clear that Microsoft has an uphill battle to fight in the OS Wars. However, says Will Zachmann, let's see what Windows 95's first "public" beta looks like.

21 Test Drives

Brian Proffit gets behind the wheel of CEnv, Nombas' programming editor, and Cosmi's 3D Virtual Reality Roomplanner, a best-selling Windows-based tool that can, with a little help, run under OS/2.

55 The REXX Column

Dick Goran discusses REXX's SESSION and private external data-queue capabilities, including the **RxQueue** command and the **RXQUEUE** and **QUEUED** functions.

59 Information Center

Happy New Year! Let's start 1995 off right with a calendar of upcoming OS/2-related conferences, trade shows, and exhibitions in North America, courtesy of Dick Conklin.

62 Under the Hood

Three methods can be used to set up an OS/2 system to boot under DOS: Boot Manager, Dual Boot, and keeping a bootable DOS floppy disk handy. Mark Minasi discusses the pros and cons of each option, along with some shortcuts.

67 Tips & Tricks

Icons, objects, shadows, and more are fodder for David Reich's analysis. This month, he also talks about CHKDSK, Win32S, editor associations, preventing restarts, the OS/2 Warp Resource Manager, and more.

72 End Notes

Our infamous book reviewer, Stan Kelly-Bootle, ponders the popularity of the letter "Z" while perusing William Zack's *The OS/2 Handbook, Second Edition: Applications, Integration, and Optimization*.

Editor-in-Chief
ALAN ZEICHICK
Senior Managing Editor
GEORGE WALSH

Technical Editor
GUY WRIGHT

Assistant Editor
ALEXANDER ANTONIADES

Editorial Assistant
ANNE MELLINGER

Art Director
DAVID BERGERON

Contributing Editors
DICK CONKLIN

STAN KELLY-BOOTLE

MARK MINASI

DAVID MOSKOWITZ

BRIAN PROFFIT

DAVID REICH

ESTHER SCHINDLER

AMY WOHL

WILL ZACHMANN

Publisher
TED BAHR

National Sales Manager
CATHERINE MCCONVILLE
(415) 905-8115

East/Midwest Sales Manager
GARY CIOCCI (603) 924-9141

Western Sales
MOLLY KNOX (415) 905-8126

Advertising Production Coordinator
JON SHURKIN

Marketing Manager
HEATHER CHAN

Circulation Manager
SARA DECARLO

Newsstand Manager
PAM SANTORO

Subscription Questions
(800) 765-1291

Reprints
ANDREA VARNI (415) 905-2552

Postmaster
SEND ADDRESS CHANGES TO: OS/2
MAGAZINE, CIRCULATION DEPARTMENT,
PO Box 56664, BOULDER, CO 80323-
6664. TELEPHONE (800) 765-1291.



EDITORIAL POLICY: OS/2 MAGAZINE IS AN
INDEPENDENT PUBLICATION WITHOUT OBLIGA-
TION TO ANY HARDWARE OR SOFTWARE VENDOR,
DEALER, OR DISTRIBUTOR. SEND EDITORIAL
QUERIES TO OS/2 MAGAZINE, EDITORIAL
DEPARTMENT, 600 HARRISON ST., SAN
FRANCISCO, CA 94107.



Chairman of the Board
GRAHAM J.S. WILSON

President/CEO
MARSHALL W. FREEMAN

Executive Vice President
THOMAS L. KEMP

Senior Vice Presidents
H. VERNE PACKER
DONALD A. PAZOUR
WINI D. RAGUS

Vice President/CFO
WARREN A. AMBROSE

Vice President/Administration
CHARLES H. BENZ

Vice President/Production
ANDREW A. MICKUS

Vice President/Circulation
JERRY OKABE

Vice President
Electronics/Design Unit
TED BAHR

Postal and Rates
SECOND-CLASS POSTAGE PAID AT SAN
FRANCISCO, CA, AND ADDITIONAL MAIL-
ING OFFICES. OS/2 MAGAZINE (ISSN
#1073-1547) IS PUBLISHED MONTHLY BY
MILLER FREEMAN INC., 600 HARRISON
ST., SAN FRANCISCO, CA 94107.

DOMESTIC SUBSCRIPTION RATE FOR ONE
YEAR IS \$39.95; TWO YEARS, \$64.95.
CANADA RATES FOR ONE YEAR ARE \$49.95;
TWO YEARS, \$74.95 (PAYABLE IN U.S.
FUNDS). FOR ALL OTHER COUNTRIES, THE
RATE FOR ONE YEAR IS \$79.95 AIRMAIL
(PREPAYMENT IN U.S. FUNDS). SINGLE-
COPY PRICE (U.S.) IS \$7.00 PLUS \$2.00
POSTAGE; INTERNATIONAL, \$10.00
INCLUDING POSTAGE.

ALL MATERIAL COPYRIGHT©1994 BY
MILLER FREEMAN INC. ALL RIGHTS
RESERVED.
PRINTED IN THE U.S.A.

ABC MEMBERSHIP APPLIED FOR
OCTOBER 1993

Your satisfaction matters:

OUR CUSTOMER-SERVICE STAFF IS
DEDICATED TO MAKING SURE YOUR
SUBSCRIPTION TO OS/2 MAGAZINE IS
HASSLE-FREE. IF YOU MISS AN ISSUE,
HAVE A BILLING PROBLEM, WANT TO
RENEW YOUR SUBSCRIPTION, OR JUST
HAVE A QUESTION:

CALL US!

CUSTOMER-SERVICE OPERATORS ARE
STANDING BY 24 HOURS A DAY.
(800) 765-1291

Reaching the OS/2 Magazine Editors

THE EDITORS OF OS/2 MAGAZINE ARE ALWAYS
INTERESTED IN YOUR QUESTIONS AND SUGGES-
TIONS, PRAISE OR CRITICISM. OUR MAILING
ADDRESS IS EDITORIAL DEPARTMENT, OS/2
MAGAZINE, 600 HARRISON ST., SAN
FRANCISCO, CA 94107. OUR MAIN SWITCH-
BOARD IS AT (415) 905-2200, AND THE OS/2
MAGAZINE FAX NUMBER IS (415) 905-2499.

Electronic Mail

COMPUSEVE MAILBOXES CAN ALSO BE REACHED
THROUGH OTHER ELECTRONIC SERVICES. FOR
EXAMPLE, THE FORMAT IS 76703.756@COM-
PUSERVE.COM FROM THE INTERNET.

ALAN ZEICHICK	76703,756
OR	ZEICHICK@ACM.ORG
GUY WRIGHT	GWRIGHT@MFI.COM
ALEXANDER ANTONIADES	71154,676
OR	OS2MAG@MFI.COM
DICK CONKLIN	76711,1005
STAN KELLY-BOOTLE	SKB@CRL.COM
MARK MINASI	71571,264
DAVID MOSKOWITZ	76701,100
BRIAN PROFFIT	75300,1466
DAVID REICH	76711,632
OR	SPEEDRACER@VNET.IBM.COM
ESTHER SCHINDLER	72241,1417
WILL ZACHMANN	76004,3657
CUSTOMER SERVICE	71572,341

CompuServe

OS/2 MAGAZINE EDITORS CAN BE REACHED ON
THE OS2AVEN FORUM ON COMPUSEVE. IF
YOU'RE NOT FREQUENTING THE VARIOUS OS/2-
RELATED COMPUSEVE FORUMS, YOU'RE MISSING A
USER FORUM OR OS/2 MAGAZINE READERS, WRIT-
ERS, EDITORS, AND THE ENTIRE OS/2 COMMUNITY
TO GATHER ELECTRONICALLY. IF YOU'RE A
COMPUSEVE MEMBER, YOU CAN VISIT THE FORUM
BY TYPING GO OS2AVEN AT THE COMMAND
PROMPT. YOU'LL BE GIVEN THE OPPORTUNITY TO
JOIN THE FORUM. GO AHEAD—THERE'S NO
CHARGE BEYOND NORMAL COMPUSEVE RATES.

TO LEAVE FEEDBACK FOR OS/2 MAGAZINE EDI-
TORS, TYPE GO MAIL AND SEND ELECTRONIC
MAIL TO THE ADDRESSES LISTED ABOVE. DON'T
BE PASSIVE! IF YOU'RE NOT A COMPUSEVE
MEMBER, HERE'S HOW TO JOIN:

■ SET YOUR COMMUNICATIONS SOFTWARE FOR
300, 1200, 2400, OR 9600 BITS PER SECOND
(BPS), 7 DATA BITS, EVEN PARITY, 1 STOP BIT,
AND FULL DUPLEX.

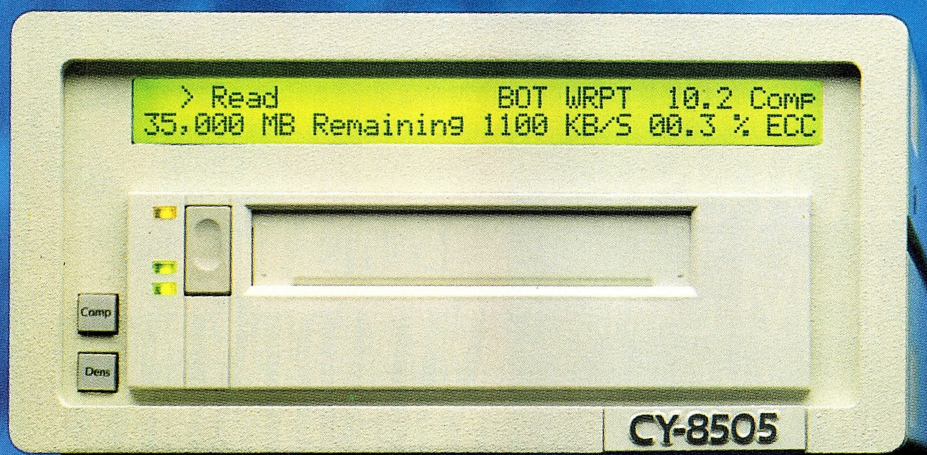
■ TO FIND THE NUMBER NEAREST YOU, DIAL
800-346-3247 WITH YOUR MODEM (IN
CANADA, DIAL 800-635-6225, VOICE ONLY).
WHEN THE MODEM CONNECTS, PRESS ENTER. AT
THE HOST NAME PROMPT, ENTER PHONES.
FOLLOW THE MENUS AND NOTE THE NUMBER
CLOSEST TO YOU. THEN HANG UP AND DIAL THE
NUMBER YOU HAVE JUST FOUND.

■ ONCE YOU'RE CONNECTED, PRESS CTRL-C.
THEN ENTER THE FOLLOWING INFORMATION AT
THE PROMPTS:

HOST NAME:	CIS
USER ID:	177000,5605
PASSWORD:	COMPUSEVE
AGREEMENT #:	CADENCE
SERIAL #:	93015

AFTER ENTERING YOUR BILLING INFORMATION, TYPE
GO IBMOS2 FOR A MENU OF THE VARIOUS OS/2-
RELATED FORUMS. NOTE THAT COMPUSEVE BILLS A
MONTHLY FEE PLUS HOURLY CONNECT-TIME CHARGES.

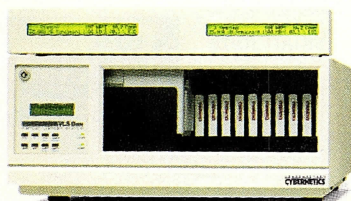
The Only 35 GB Tape Drive With Fast SCSI Compression



All tape subsystems are not created equal. Only the CY-8505 can give you capacity of up to 35 GB and transfer rates as fast as 90 MB per minute.

That's because the CY-8505 is the only tape subsystem that features switch-selectable, Fast SCSI Compression. So you get the highest performance possible — and the lowest cost per megabyte.

A MTBF of 160,000 hours ensures reliability. The bit error rate of less than 1 in 10^{17} is the best in the industry. A backlit display gives you complete status information, including command under execution, transfer rate, compression ratio, tape remaining, and more.



Our CY-CHS10A features two tape drives and can store up to 385 GB on eleven tapes — without tape handling.

The CY-8505 is the most advanced tape subsystem on the market, and it offers the most innovative options.

True Compatibility With:

Alliant	DEC TU/TA81	NCR	Silicon Graphics
Alpha Micro	DEC Unibus	NeXT	STC
Altos	Gould/Encore	Novell	Stratus
Apollo	HP	OS/2	Sun
Arix	IBM AS/400	PS/2	Texas
AT&T	IBM Mainframe	Parallel Port	Instruments
Basic-4	IBM RISC/6000	PC 386/ix	Unisys
Concurrent	IBM RT	PC MS-DOS	Ultimate
Convergent	IBM S/38	PC Xenix/Unix	Wang
Data General	ICL	Pertec	Windows NT
DEC SCSI	Intergraph	PICK	— and more
DEC BI-Bus	Macintosh	Plexus	
DEC DSSI	McDonnell	Prime	
DEC HSC	Douglas	Pyramid	
DEC Q-Bus	Motorola	Sequent	

Fast SCSI Compression can increase the native 7 GB capacity by as much as five times; *Accelerated File Access* (for Unix systems) allows you to locate a file in an average of 85 seconds; *Data Encryption* lets you control access to sensitive data through the use of

uniquely encoded card keys; and the *Advanced SCSI Processor* allows multiple drives to work together in striping, mirroring, cascade and independent modes. You can even copy and verify tapes off-line.

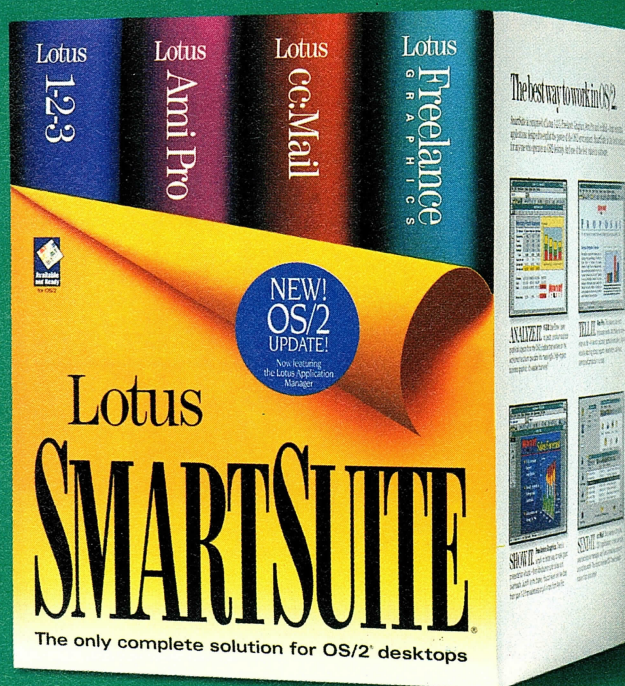
Compatible with virtually every computer system and network, the CY-8505 is available in a single or dual desktop unit, in a rack mount configuration, or as part of a tape library system that can store as much as 3 TB.

Backed by a two year warranty and our responsive in-house technical support group, the CY-8505 is fast setting the pace in data storage.

For more information, call today at
(804) 873-9000.

CONTEMPORARY
CYBERNETICS

TO understand the power
of working
TOGETHER,
just check OUT
WHAT LOTUS
and IBM CAME
UP with.



Lotus® has developed SmartSuite.® IBM® has developed OS/2® Warp. Together, the two companies provide a powerful solution for a new and better way of working. SmartSuite 1.1 is the only suite of desktop applications created to take full advantage of the power and speed of the OS/2 operating platform.

Lotus' 1-2-3® spreadsheet, Ami Pro® word processor, Freelance Graphics® presentation graphics and cc:Mail® electronic mail, are each acknowledged as the best in their class and they've been designed from the ground up to exploit the full potential of IBM's OS/2 Workplace Shell.™

SmartSuite, together with OS/2, offers the highest possible level of product and operating system integration. All applications share a common

interface, including SmartIcons.® All work together to facilitate sharing across or switching between applications. All are workgroup enabled for single-click workgroup collaboration. And all have cross platform capabilities, so work from other platforms is secure and accessible.

With SmartSuite and OS/2, opening, printing, deleting or mailing spreadsheets, documents, presentations and messages are simple drag-and-drop procedures. And, of course, with true multitasking and multithreading, you can be performing any number of these tasks at once.

For more information or to order Lotus SmartSuite or IBM OS/2, call 1-800-3-IBM-OS2.

EDITORS' CHOICE AWARD
OS/2
MAGAZINE
1994
cc:Mail 1.01



Best New OS/2 Application
Reader's Choice

Lotus
Working Together®

Perspectives

Happy New Warp

Dictionaries are about as ubiquitous in magazine offices as source-code debuggers are in Redmond. So, it was only a matter of time until we checked Webster's Ninth New Collegiate to see what "warp" really means (other than obvious science-fiction references to faster-than-light starship propulsion systems).

We knew some of the definitions, like those relating to wool and yarn (the infamous "warp and woof"). Nobody suspected warps are also "the cords forming the carcass of a pneumatic tire."

To warp can mean "to move (as a ship) by hauling on a line attached to a fixed object"; it can also refer to the rope used for that purpose.

What about the sci-fi definition? It refers to temporarily bending three-dimensional space in four dimensions to shorten the linear distance between a spaceship's origin and destination points, and thus reduce travel time. That's sort of covered in Webster's Ninth: "a twist or curve that has developed in something originally flat or straight."

A few less amusing definitions can also be found. As a verb: "to cause to judge, choose, or act wrongly." As a noun: "a mental twist or aberration." Those aren't good messages to send to potential OS/2 buyers.

Those IBM powers-that-be who decided on "OS/2 Warp" (at the 11th hour) clearly believe they've found the killer consumer brand name for The Next Generation operating system. Maybe they're correct, and they'll be slapping each other on the back as OS/2's market share and mind share grow astronomically, and IBM's stock skyrockets. On the other hand, I've already seen confusion (and concern) from folk who don't hang out with Kirk and Picard, and never heard of Sisko and Janeway.

Once we tire of the inevitable "Fire all phasers, ahead Warp Factor Three" jokes, what are OS/2 enthusiasts left with? A silly brand name that doesn't do today's most advanced 32-bit desktop operating system any justice.

As I write this editorial, OS/2 has been taking it on the chin in the mainstream press. This last week in October saw negative coverage in the *New York Times*, *Wall Street Journal*, *Boston Globe*,

PCWeek, and several other influential newspapers and magazines. In most cases, it seems that the reviewers' unhappy experiences can be attributed to bugs in the first copies of OS/2 Warp 3, or testing based on beta code. A few reports read as if those publications' writers and editors decided OS/2 Warp was worthless long before they received the product, and merely searched for a little evidence to support their prejudices. On the other hand, many of the negative observations were accurate and completely justified.

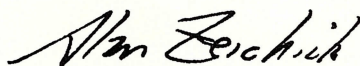
In our own experience with the beta versions, and a short amount of time spent with the final product, it's clear that OS/2 Warp is a giant step forward from OS/2 2.11, and has addressed many of OS/2's biggest flaws. However, a few issues remain to be addressed in installation, the user interface, and elsewhere.

You can read Brian Proffit's hands-on first look of OS/2 Warp 3 on page 24 of this issue. Brian worked from actual shipping code, not a beta version, although it's certain that IBM will have slipstreamed at least one bug fix into OS/2 Warp by the time you receive this issue. Next month, we'll provide a much more in-depth look at OS/2 Warp's installation, ease of migration, performance, hardware support, user interface, Internet support, BonusPak, and more.

OS/2 Warp 3 (despite the name) was the best thing to happen to the OS/2 community in 1994. Let's hope in 1995, OS/2 will maintain momentum, gain market acceptance, and inspire the creation of high-quality native OS/2 applications.

Let's even hope that Windows 95 comes out fighting. In a battle between well-matched and well-heeled competitors, OS/2 users will be the real winners as market pressures force IBM, Microsoft, and other software makers to aggressively add new features, capabilities, and value to satisfy customer needs.

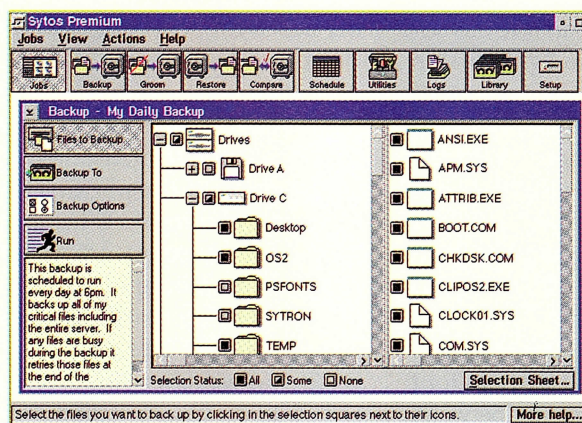
It's gonna be a great year.



Alan Zeichick
Editor-in-Chief



WE'VE JUST CHANGED THE FACE OF OS/2 BACKUP.

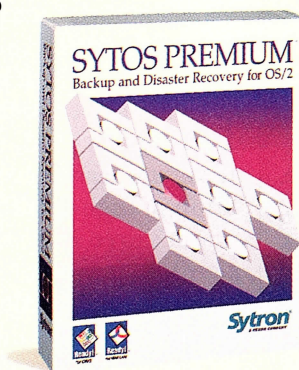


The standard in OS/2® backup just got a facelift. Introducing Sytos Premium™ Backup and Disaster Recovery for OS/2 from Sytron. It's the same reliable Sytos Plus you know and love, and a lot more.

For starters, we gave it a bold new look.



Featuring easier access to its powerful features. We added emergency disaster recovery, so you can recover your entire system if need be. Then we bolted on a turbocharger, so you can now recover OS/2 from the last full backup in less than 10 minutes. Plus, there's a graphical, mul-



tipple event scheduler so you can schedule automated jobs to run whenever you like. And the broadest support for industry standard QIC and DAT tape drives. There's even optional built-in autoloader support. The

REXON
SOFTWARE ■ STORAGE ■ SYSTEMS

result? Simply the fastest, easiest to use and most flexible backup and disaster recovery solution for LAN Server networks.

So contact your favorite software dealer, or call **1-800-877-0016** for more information. Because OS/2 backup and recovery has never looked this good.



Sytron®

EGGHEAD
800-EGGHEAD

INDELIBLE BLUE
800-776-8284

PC CONNECTION
800-800-0005

IBM DIRECT
800-IBM-CALL
(Media SYTR01)

© 1994, Sytron Corporation, a subsidiary of Rexion, Inc. Sytron is a registered trademark and Sytos Premium is a trademark of Sytron Corporation. IBM and OS/2 are registered trademarks of International Business Machines Corporation. All other product names and logos are trademarks of their respective owners.

Letters

Disbatch from the front

Dear Editor:

I just read Stan Kelly-Bootle's review of Ronny Richardson's OS/2 batch file book. His reference to deficiencies in the transition to OS/2 batch files from DOS reminded me of a favorite quirk that OS/2 seems to have let slip between the cracks. One hack in the DOS batch file programmer's bag of tricks has been the use of the **FOR** command with a slash, which strips off a leading character in a string.

```
FOR %v IN (/Stan) DO ECHO %v
```

This string would print **S** and **tan** in succession. Under OS/2, the same command prints **/Stan** (slash included). As a result, processing individual characters in strings has become problematical—to say the least. When will the creators of the brave new operating systems realize how much we cherish these little undocumented features?

Mark Zudeck via e-mail

November "Perspectives"

Dear Editor:

I can't begin to tell you how many times I have left a disk in my PC when I shut down. My heart always skips a beat when I start it up and see those infamous messages. I used to be able to solve this problem when I only used DOS, but now that I use OS/2, the problem is back to haunt me. I have a DOS program that writes new boot code on floppy disks. This boot code tells the loader to go back and continue with the boot sequence. It was slow, but at least it didn't kill my system. How I long for such a utility under OS/2.

Jeff Hildebrand
via the Internet

Win-OS/2 video drivers

Dear Editor:

I followed the instructions in Scott Vouri's article "OS/2 versus Advanced Graphics" (October 1994, pp. 39-41), which focused on enabling SVGA under OS/2. I followed the instructions meticulously and it worked—for native OS/2 and DOS programs. However, running any Win-OS/2 applications caused the video to go bonkers, requiring a reboot to restore the screen to anything readable.

My system is a plain vanilla IBM PS/1 W76 model (212MB 486DX33 with 8MB RAM) running OS/2 2.1. Do you have any suggestions?

Justin E. Harlow III
via CompuServe

The magic needed to run Win-OS/2 programs lies in the system.ini file in the \os2\mdos\winos2 directory. Two lines, in particular, are important:

```
display.drv=?????????.drv
```

and

```
sdisplay.drv=?????????.drv
```

The first line tells Win-OS/2 which display driver to use when running Windows applications full-screen. A normal Windows 3.1 display driver works fine. If you have a Super VGA, which it seems you do from your PM driver installation success, it should read:

```
display.drv=wspdsf.drv
```

(**Wspdsf** stands for WinSPeeD Small Font.) The second line tells Win-OS/2 which display driver to

use when running a Windows application in "seamless" (in a window on the Workplace Shell) mode. This line should read:

```
sdisplay.drv=wspdsf.drv
```

-Scott Vouri

Desktop backup software omission

Dear Editor:

Lenny Bailes' review, "Preserving Your Desktop" (November 1994, pp. 44-49) omitted the GammaTech Utilities' Sentry desktop backup function. Sentry backs up the desktop files and the `\desktop` directory tree automatically—as many as 99 generations can be saved.

For many customers who are buying the GammaTech Utilities for disk optimization, file recovery, and file undelete, finding such a useful capability is a pleasant surprise.

Felix Cruz
SoftTouch Systems

Errata

In the feature on the OS/2 Magazine Editors' Choice Awards (October 1994, pp. 32-38), the telephone number for Walnut Creek CD-ROM was listed incorrectly. The correct number is (800) 786-9907.

In "Cruising the Internet" (November 1994, pp. 33-37), the Internet address for Hobbes CD-ROM was listed incorrectly. The correct internet address is `ftp.cdrom.com`, and the OS/2 programs are in the `/pub/os2` directory.

MAXIMUM

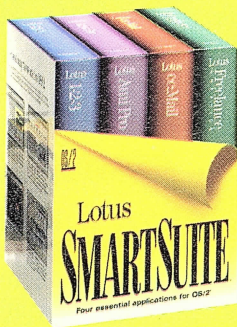
SUITENESS

Move To Lotus SmartSuite For OS/2 - Just \$189*!

Looking for a suite deal? We've got the suitest. It's new Lotus SmartSuite for OS/2 1.1, featuring major releases of Lotus' fully integrated applications: 1-2-3, the Windows spreadsheet that's won the hearts and minds of virtually every industry reviewer; Ami Pro, the lightning-fast word processor; cc:Mail, the easy-to-use electronic mail program; and Freelance Graphics, the presentation graphics software that always puts on a show. This complete suite gets a turbo-

charge from OS/2 Warp Version 3, the all-new, high-performance version of OS/2, with the same multi-tasking capabilities and 32-bit interface you expect, plus new features including animated icons and a floating toolbar for easy access to your most-used applications right on the desktop. And you get it all--Lotus SmartSuite for OS/2 1.1 and OS/2 Warp Version 3--for the very sweet price of only \$189*! Of course, you can upgrade to Lotus SmartSuite for OS/2 1.1 from any Lotus or competitive product! Plus, doing

business with Corporate Software truly sweetens the deal. After all, we are the world's leading provider of brand-name software and support services. Not to brag or anything, but over 18,000 callers a day count on our complete understanding of what we sell and our total dedication to satisfying the customer. But hurry, there's only a limited time for maximum suiteness. And at these prices, supplies won't last very long. So do call soon. Before the deal goes (ahem) sour.



\$189*
800 467-9476
 Source Code IB06

SmartSuite Special Bundle.....106209 C....\$189
 Competitive Upgrade.....99505 C.....\$259
 OS/2 Warp Version 3.....104635 C.....\$69

IBM



CORPORATE SOFTWARE

*Package includes SmartSuite OS/2 product and OS/2 Warp Version 3 operating system. Offer ends January 31, 1995. Call for Canadian pricing. MasterCard, Visa, Discover, and American Express accepted. Prices do not include applicable sales tax, handling and freight. Corporate Software, Inc., 2 Edgewater Drive, Norwood, MA 02062-4637. All product names referenced herein are trademarks of their respective companies.

IBM Swings the Big Stick

OS/2 WARP IS RELEASED IN GRAND STAR TREK STYLE BY ALEXANDER ANTONIADES



There's been a definite buzz in the air of the OS/2 community since last summer's first beta of OS/2 Warp. The release stirred the imagination of OS/2 users everywhere as their favorite operating system became faster and easier to use. The second Warp beta, despite the numerous bugs that plagued its release, went even further. Many of the suggestions from beta testers made their way into the final release, making OS/2 Warp the easiest version of OS/2 to use and install. Now OS/2 Warp 3.0 is here. What does that mean for OS/2 users?

OS/2 Warp 3.0

The first difference in the new release of OS/2 is a new name for OS/2. The rumor is that during the final days before the public announcement, a group of IBM executives met with IBM Chief Executive Officer, Lou Gerstner to discuss what the new version of OS/2 would be called. In the middle of the presentation, which consisted of variations on OS/2 3.0, Gerstner said "why not just call it Warp?" And with one word, all of the promotional material was sent back to the drawing board.

Nobody knows how long IBM will use the Warp name for OS/2 (so, why does the VER command

list OS/2 Warp 3.0's version as 2.3?), but IBM officials have stated that OS/2 will be called OS/2 Warp from now on. Of course, that statement was made by the same IBM that once said OS/2 2.11 (as it is now universally known) would be

cost of the "free" Bonus Pak.

Besides the BonusPak, OS/2 Warp includes a large number of improvements to the main operating system. The main change, which is responsible for the speed increase, was upgrading the main Workplace Shell code to 32 bits and rewriting most of the video drivers. Other foundation code, such as the print engine, was also rewritten to 32 bits. But many of the enhancements came in the form of subtle changes and tweaks to almost every part of OS/2.

The changes from OS/2 2.1 to OS/2 Warp range from obvious to subtle. A new logo appears on boot-up and many of the icons are new, so the Workplace Shell looks quite different.

But, under the covers, dozens of small tweaks have been made that everyone will find out about during the coming months. For example, when you drag from one window to the other, the window you're dragging from stays in the background so as not to obscure the other.

The BonusPak

Improvements in the base operating system aside, it's been the ever-expanding Bonus Pak that has been generating both interest and spec-

BUG ALERT!

During the initial release of OS/2 Warp 3.0, IBM found a bug in the installation routine that caused it to hang if the hard drive contained a *config.bak* file. IBM halted production to fix the bug, but some early copies of OS/2 Warp, which contained the installation bug, were shipped.

You can tell if your copy of OS/2 has the bug by checking the file called *sysinst1.exe* on Disk 1. If your copy has the bug, this file will be 4,224 bytes long. If you have the corrected version, the *sysinst1.exe* file is 4,992 bytes long. If you find that your copy of OS/2 Warp contains the defective file, call IBM at (800) 992-4777 or contact your local IBM representative.

called the OS/2 2.1 Service Release. Between OS/2 Warp, Windows 95, and Apple's code name Sagan, 1994 has been a bad year for the naming of operating systems.

What does OS/2 Warp include? Well, IBM says that the BonusPak (see sidebar on p. 30) will be included with all versions of OS/2 Warp. But, the fact that the BonusPak comes on a separate CD-ROM opens up the possibility of OS/2 Warp versions *sans* BonusPak. Clearly, the best-level OS/2 Warp carries a list-price greater than \$100 due to the

ulation about the future of OS/2. Clearly, IBM had a problem with the old OS/2 applets—since none of them showcased the operating system's advantages and many were embarrassingly second-rate. The challenge was to come up with a new set of applets in time to coincide with the new release of OS/2. The answer was the BonusPak.

The Bonus Pak is a collection of applets (or, as IBM Personal Software Products president Lee Reiswig calls them, "Warplets") that are separate from the main OS/2 installation. And, while a master installation utility is available for the whole Bonus Pak, all of the programs can be installed independently. For future releases, IBM has said that the BonusPak will include different programs than it does now.

According to IBM marketers, the goal of the BonusPak core applications is to showcase OS/2's System Object Model (SOM) drag-and-drop capabilities. The main application, IBM Works 2.0 (an upgrade of Footprint Works), contains a word processor, spreadsheet, report writer, database, and personal information manager (PIM) (based on the unreleased Arcadia Workplace Companion 1.65). In addition, a version of Global Village's Fax Works 2.0 can send and receive faxes of unlimited sizes. And, all of these applications can use drag-and-drop to interact with each other.

IBM's favorite OS/2 Warp demonstration involves dragging a graph from the spreadsheet tool into a word-processor document, dragging names from the PIM onto the document, and dragging the document into the fax object to automatically fax the document to

those names.

With Internet hysteria sweeping the world, IBM is seizing the opportunity to position OS/2 Warp as a road warrior on the information superhighway. The first step was to include a limited version of Hilgraeve's new terminal emulator, HyperAccess (which now sports a graphical interface) and the first native OS/2 version of CompuServe Information Manager. But the main weapon is the Internet Access Kit, which is a slimmed-down version of IBM's older TCP/IP for OS/2 access kit with the main network portion stripped away and a little polish added. IBM is also offering a trial period of three hours on their new Advantis Internet-access network so new users can surf the Internet right out of the box. Of course, once OS/2 Warp enthusiasts try Advantis for free, they're unlikely to shop around for a lower-cost carrier—or so IBM hopes.

In memory of Darren Miclette.

One somber note in the OS/2 Warp release was the sudden loss of Darren Miclette, one of the leading programmers who was responsible for Win-OS/2, OS/2 for Windows, and seamless Windows support. He died suddenly before OS/2 Warp was finished. OS/2 Warp is dedicated to him. "He was one of the nicest people you'd ever meet," said long-time friend Dave Reich.

In his memory, the OS/2 Warp development team restored the original "Easter egg" secret screen. If you have installed "optional bitmaps," you can see the tribute screen by clicking on the desktop and pressing <Shift+Ctrl+Alt+O>.

Details

OS/2 Warp, priced at \$129, is expected to be widely available in the U.S. after October 28, 1994. Because this version of OS/2 is geared toward Windows and OS/2 for Windows users, IBM is only offering upgrade discounts for OS/2 for Windows users at this time. The upgrade discount will be a \$50 or

\$25 rebate, depending on when the package of OS/2 for Windows was purchased. IBM stated that the street price of OS/2 Warp should be approximately \$80. A massive media campaign will take place early next year to support OS/2 Warp.

The first addition to the OS/2 Warp family will be released before the end of 1994. The "full" version of OS/2 Warp (or, as we like to call it, OS/2 Warp 3.0 with Windows 92 support), which includes Win-OS/2, will be available for \$199.

The next version, which is due sometime during the first half of 1995, is the OS/2 Warp LAN Client, which will include Netware, LAN Server, and TCP/IP network drivers. Pricing for the LAN Client bundle has yet to be announced, but it will be interesting to see if IBM is willing to give up the profits generated by their expensive TCP/IP for OS/2 kit to make LAN Client competitive. The LAN Client will also be important for comparisons to Microsoft's Windows 95 and Windows NT, which will include network drivers in every package.

The release of OS/2 Warp is exciting, but it is the changes taking place in IBM that will ultimately determine its fate. For example, pieces of the Bonus Pak originated in different divisions of IBM—something that would never have happened in the old IBM. Another piece of encouraging news is that the IBM PC company will be announcing greatly expanded OS/2 support for 1995 and beyond. And finally, the fact that IBM and Sears, Roebuck chose to launch the Advantis network in conjunction with OS/2 Warp hints at OS/2 playing a bigger role in IBM's plans as a company.



You don't need weird hair to form a powerful peer group

Announcing LANtastic® for OS/2®

Guilty of going to extremes to win peer-to-peer connectivity for your team? Then consider LANtastic for OS/2, a true 32-bit multitasking, multithreaded peer-to-peer network operating system utilizing OS/2's superior power and performance.

LANtastic for OS/2 coexists with Novell® NetWare Requester™ for OS/2 and IBM® LAN Server clients and easily

communicates with LAN Server, Windows NT™ and other SMB-based servers. It has centralized network management and flexible security options that are easy to use.

Still need more proof? Call 1-800-809-2079 for the Artisoft Premier™ or Artisoft Advantage™ Partner nearest you. Then judge for yourself.



ARTISOFT®

UNTIL NOW, YOUR CHOICES FOR OS/2 BACK-UP WERE TAKE IT, OR LEAVE IT.



Unfortunately,

"like it" wasn't

always an option. Because

until now you've been

force-fed the same

flavor of OS/2™

backup. And it

hasn't exactly

been gourmet fare. It's more likely that they've been feeding you a port

of a Windows product and passing it off as native OS/2. But now there's

an alternative to leftovers: Cheyenne ARCsolo™ for OS/2 from Cheyenne.

ARCsolo is the first substantial native OS/2 backup solution. With an

Chez Spud

~ APPETIZERS ~

Potatoes on the Half Shell
Potato Sampler
Potato Kabobs
Antipotato
Potato Paté with Garlic Toast
Hearts of Potato Salad
Caesar Potato

~ ENTREES ~

Served with French Fries
Old-Fashioned Potatoes
Oven-Baked Potatoes
Potatoes Under Glass
Filet of Potato with Bernaise
Potato Wellington
Rack of Potato
Blackened Cajun Potato
Potato Pilaf

~ HOUSE SPECIALTIES ~

Potato Soufflé
Potato Gratin
Potato Casserole
Potato Salad
Potato Pie
Potato Pancakes
Potato Fritters
Potato Tarts

~ DESSERTS ~

Potato à la Mode
Potato Pudding
Potato Sherbet
Potato Split
Potato Custard
Potato Mousse
Fresh Potatoes and Cream

~ WINES ~

Chenin Potat 1989
Fume Potat 1991
Potat Sarah 1992
Cabernet Potat 1990
Hearty Potat 1993
Potat Classico 1988
House Wines by the Glass
Potat Brothers Red & White

interface similar to the user-

friendly Presentation Manager

and Workplace Shell front-ends,

ARCsolo features drag-and-

drop functionality, and an

object-oriented approach.

For users, that means less

training and easier operation. And

ARCsolo's multi-threaded engine performs simultaneous operations and

provides higher performance, so it's faster than whatever you

have on your plate. To order a helping, call 1-800-243-9462*.

And satisfy your hunger for a true native OS/2 backup.



CHEYENNE

NEW YORK · PARIS · LONDON · MUNICH · TOKYO

ARCsolo and Cheyenne are registered trademarks of Cheyenne Software, Inc. All other trademarks or registered trademarks are the properties of their respective holders. ©1994 Cheyenne Software, Inc. All rights reserved. *Outside North America, please dial (516) 484-5110.

New Definitions of Interoperability

CONNECTING EVERYTHING TO EVERYTHING BY AMY D. WOHL



A few years ago, we queried customers over the telephone about their use of open systems. Part of the investigation was an attempt to find out what customers thought that term meant. In our survey, the only definition that was universally accepted was "transparent interoperability," although most of our interviewees used much more down-to-earth language to tell us what they wanted.

"We need to connect everything to everything," one chief information officer said. "Our users should be able to access any data they need, regardless of what system they're using or where the data resides," an information services vice president firmly stated.

Our survey showed that these users were satisfied with pretty low levels of interoperability. Attachment, access, and data exchange were about all they expected, which was lucky, because they were certainly all most of them got. The data content would often have to be rearranged manually, or by formatting software on the receiving end to make up for the relatively low level of interoperability.

Today, customers' expectations are much higher. They still want transparent interoperability, of course, but they're interested in smudge-free window panes! Customers aren't satisfied with being able to run in a particular software environment, such as UNIX, Mac-

intosh, or OS/2; they want to be able to run applications from other environments where the software is more abundant or more seductive—especially Windows. Schemes that permitted programs or data sets to be laboriously moved from one environment to another have long existed, but most customers are not satisfied with this relatively primitive level of interoperability.

Instead, they have in mind elegant schemes, such as the ones now provided by the Apple Power Macintosh, where Macintosh and Windows programs can reside side-by-side in separate (but equal) windows, each running against their own program. In this setup, text and graphics can be cut and pasted back and forth.

One important feature is that the user can control the less-familiar environment (in this case Windows), with pull-down menus and controls from the familiar Macintosh environment, moving over to Windows only to run the application program itself, but not to invoke it, interoperate with it, or depart from it.

Similarly, OS/2 users can run DOS and Windows 3.x programs side-by-side with their various OS/2 environments. They can use OS/2 tools to create and manage these sub-environments while running "real" DOS or Windows applications software inside the appropriate windows. Again, the user can cut and paste elements from

one program into another, using the OS/2 clipboard as a transfer medium.

Interoperability is beginning to have other broader meanings. Users are no longer contained within their desktop, their network, or their enterprise. For the price of a modem and a local phone call (plus some monthly charges from a service provider) they are free to roam the worlds of the on-line services, interoperating with the universe.

Again, expectations had to start at an appropriately low level. Most on-line services began with arcane, hard-to-use interfaces, secret commands, and single-type-face ASCII text editors that hadn't even learned not to rudely break words at the end of lines. Services are numerous, but not necessarily easy to find. In the case of the Internet, descriptions or directories of the world's largest pile of on-line electronic information aren't even available in electronic form. We buy them in fragmented form as fat volumes in book stores. What inconsistency—what irony—what a business opportunity!

Now, we are starting to see that on-line services are beginning to understand interoperability as an issue. The signs are clear. Interfaces from both the services themselves and from such unlikely places as operating system providers and third-party independent software vendors (ISVs) allow users to retain their familiar GUI environments as they hook to and peruse their

The Big Picture

favorite on-line playgrounds. OS/2 Warp 3.0, of course, has provided a particularly classy example, with its standard-setting interface to the Internet. But, such interfaces will become requirements as Novell adds Corsair and Microsoft puts an on-ramp into Windows 95.

Connections between services have also been established. What that gives you today is the ability to send mail from one service to another or to access limited Internet services from within a commercial on-line service. Eventually, user demands for transparent interoperability will force all services to provide seamless and graceful connections so that, regardless of where the user chooses to enter the on-line world, it will appear as a single, nearly infinite, and completely integrated universe.

One step in that direction might be made if each service stored a directory or index of the services

and information that are available on other services. Or, all services could, in client/server fashion, share a common directory (which could be automatically replicated and distributed for convenience and performance). If you asked for information about Hot Air Balloons, you'd not only get information from two travel services on your home service, but a dozen references to encyclopedias, games, clubs, bulletin boards, and recent articles in other resources.

With even more automation, selecting any of these options could automatically (and transparently) take you to the appropriate service. If you were already a user of the service, it would simply sign you on. If you weren't, it would offer you a guest pass or the opportunity to become a user. Usage might increase enormously as people gained access to better information without the need for difficult and largely man-

ual searches.

Boundaries between enterprise information and on-line services also need to disappear (except for those required to maintain information privacy). Shopping, customer and supplier activities (which necessarily must exist across multiple systems and can use on-line public services as trusted neutral intermediaries), and user support. If you can't figure out how to do something and it's not in your local help file, the system will automatically and transparently take you out to an appropriate on-line service that can shed light on the problem.

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end-user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.

Ever wondered how they keep on top of all the things that need to be done to run the Fiesta Bowl?

**The answer is OS/2 and Relish
A Winning Combination**

Relish is for individuals who want power and reliability.



for OS/2



time management for the way you want to work

Relish is for workgroups with dynamic and complex needs.



for LAN Server

Sundial Systems Corporation

310•596•5121

909 Electric Ave, Suite 204, Seal Beach, CA 90740 USA

©1994 Sundial Systems Corporation. All rights reserved. Relish is a registered trademark of Sundial Systems Corporation. OS/2 is a registered trademark of International Business Machines Corporation. The READY! for OS/2 and READY! for LAN Server certification marks are trademarks of International Business Machines Corporation and used by Sundial Systems Corporation under license.

Reader Service No. 8

16 OS/2 MAGAZINE JANUARY, 1995

**OS/2 WARP CELEBRATION
PERSONAL TAX SOFTWARE**

sea TAXDOLLARS™ 1994
SIMPLE - EFFECTIVE - AFFORDABLE

Forms: 1040, W2, 2106, 2441, 8829
Schedules: A, B, C, D, E, EIC, R, SE
Direct Deposit by IRS Approval 1040PC

Easy to Use - Automatic Calculation - Final Review & Analysis - Comprehensive "WHAT-IF" - Direct Deposit with IRS Approved 1040PC - Tax Tips - ETC.

The best OS/2 personal tax software is better than ever because it is FREE to the first 250,000 orders.

~~\$39.95~~

FREE

Planning Version (\$7.95 S&H)
Ready & Ships Now
Final Version (\$7.95 S&H)
Ships in Late Jan95
Both Version (\$11.95 S&H)
* CA Resident Adds 7.75% Tax

Send check to:
BT&T Consumer Technology
30251 Golden Lantern - Suite E 405
Laguna Niguel, CA 92677

Or have your credit card ready and call (24 hours - 7 days):
1-800-OS2-TAX Dollars or 1-800-672-8293

Shipping & Handling (S&H) Charge is non-refundable **Must write or mention code: OS2MZ01**

BT&T CONSUMER TECHNOLOGY

Reader Service No. 9

Taking Windows 95 Seriously

WINDOWS 95'S LIMITATIONS PUT OS/2 ENTHUSIASTS
INTO A VERY UPBEAT MOOD BY WILLIAM F. ZACHMANN



Here we are, cruising along at Warp 3. I am using the IBM Works word processor from the OS/2 Bonus Pak to write this column. Delivery of Windows 95 (formerly known as Chicago) is likely to be months away. As I write this column, Microsoft hasn't even announced when they'll start broad public distribution of Windows 95, unrestricted by non-disclosure agreements (NDAs). If things go well for Microsoft, they should at least have a non-NDA beta underway by the time you read this. If they don't, chances are good that Windows 95 might be delayed beyond even the "first half of 1995" ship date that Microsoft promised after the "by the end of 1994" date they previously promised was, shall we say, declared inoperative. The final Microsoft product, however, is still expected well into the future.

As I have pointed out in the past, Windows 95's fundamental architecture is, in many ways, a dubious one, given the promises made for it. Its ability to robustly run multi-threaded Win32 applications appears compromised by what remains semi-cooperative multitasking—at least while 16-bit DOS and Windows legacy applications are running. Many 32-bit calls are, in fact, "thunked" into their old 16-bit counterparts. All Windows applications (32-bit as well as 16-

**Windows 95
(despite its obvious
problems or potential
problems) should not
be underestimated—
let alone counted out
entirely.**

bit) run in a single system virtual machine. The Win16Lock mutual exclusion (mutex) semaphore leaves the window wide open for misbehaving applications to lock up the whole system.

The fact that OS/2 Warp 3.0 already undeniably meets any expectations hoped for in Windows 95, coupled with the apparent limitations of a Windows 95 that isn't even ready for prime time (and won't be for some time) explains why a number of OS/2 fans are in a very upbeat mood these days. Some enthusiasts, long convinced of OS/2's inherent technical superiority, may even be tempted to assume that OS/2's victory over Windows 95 is all but assured. They shouldn't

be, however. OS/2 Warp has certainly given OS/2 a much needed boost, but Windows 95 (despite its obvious problems or potential problems) should not be underestimated either—let alone counted out entirely.

Because I have made an effort to point out Windows 95's architectural limitations and potential problems, some folks have apparently assumed that I am convinced that Windows 95 will not be a tough competitor for OS/2. That, however, is most definitely not the case. On the contrary, I think it is quite likely that Microsoft will be able to overcome its problems at least well enough to satisfy the majority of personal computer users, as they did successfully with Windows 3.x. Windows 95's architecture poses some serious challenges to Microsoft and undoubtedly explains why completing the product has taken so long, but chances are good that Microsoft will eventually overcome those challenges sufficiently enough to field an effective competitor to OS/2.

Three primary factors are likely to determine just how well OS/2 Warp and Windows 95 will do in direct competition with each other. These factors include the products themselves; how well IBM and Microsoft, respectively, plan and execute their marketing and distribution of the products; and how

well IBM does in what is still an uphill struggle to capture territory from Microsoft's Windows 3.x market share (and mind share) base.

If the first two factors were equal—that is, if OS/2 Warp and Windows 95 were approximately equally good products and both equally well-marketed, Microsoft would have to be considered the odds-on favorite to retain, with Windows 95, the dominance obtained by Windows 3.x. Similar to an incumbent in politics, Microsoft has a strong positional advantage.

Microsoft does not need to create a better product with Windows 95 or market it better than IBM does to win greater market share. Of course, that does not mean Microsoft can win with no product at all. Microsoft's advantage as the incumbent is gradually being eroded by the delays in Windows 95's schedule. Barring substantial further delays beyond mid-1995, however, Microsoft will certainly still have considerable positional strength when Windows 95 finally ships.

Microsoft has the additional advantage of marketing and distribution. Until very recently, IBM had not done an exemplary job of getting the OS/2 message across. Microsoft, on the other hand, long ago mastered the art of telling its story very well to ordinary users. IBM is starting to do a much better job at marketing, distributing, advertising, and merchandising OS/2, but it still stumbles occasionally when the "old IBM" reasserts itself. The elephant may be learning to dance, but it still isn't as graceful as Microsoft—especially when waltzing around the press or wooing consumers.

If IBM is going to win the battle with Microsoft, its best shot will be having a truly superior product and by demonstrating that superiority to users in a clear form. IBM has taken a very big step in that direction with OS/2 Warp 3.0 and the Warp Bonus Pak.

IBM will have no time to sit back and rest on its laurels. Microsoft undoubtedly has many very talented and capable people working very hard to package Windows 95 into a form that demonstrates as much or more practical utility for users than OS/2 Warp has delivered. OS/2 Warp's cards are on the table. Microsoft is still drawing Windows 95's from the deck. IBM needs to make sure its own aces are in the hole and be ready to respond to Microsoft's upcoming salvos from Windows 95.

At the end of the day, however, the fundamental capabilities of each product will decide the eventual outcome of the struggle. It is very likely that judgement based on this type of criteria will be IBM's greatest advantage. Although Microsoft can prevail simply by making Windows 95 at least as good as OS/2 Warp, IBM has a very good chance of winning if OS/2 Warp proves to be substantially better than Windows 95.

Direct comparisons between OS/2 Warp and Windows 95 are very important. Both IBM and Microsoft began, months ago, to make claims and counter claims to put their own spin on their respective champions. Microsoft fired the first salvo with the *Chicago Reviewers' Guide*. IBM struck back—not only at the October 11 Warp launch with a *Warp Reviewers' Guide*, but before that, with the *Warp vs. Chicago: A Decision Maker's Guide to 32-bit Operating System Technology*. Microsoft quickly struck back, claiming benchmark results that showed that Windows 95 was many times faster than OS/2 Warp. And so it goes.

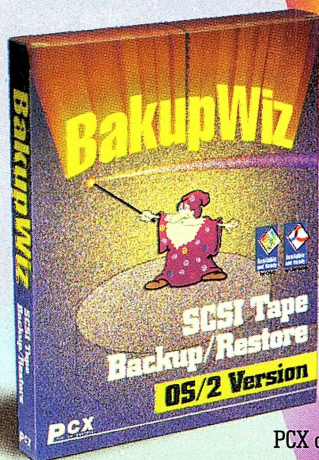
The ongoing war of words will eventually be decided. However, the broad testing and benchmarking of both OS/2 Warp (in whatever version is current) and Windows 95 (whenever it finally ships) will be the most significant contributing factor toward the outcome.

Only then will we finally be able to determine, clearly and unambiguously, how the two products really stack up against each other.

If Windows 95 runs faster than OS/2 Warp, performs better in low-memory systems, offers better compatibility for existing 16-bit DOS and Windows applications, runs multithreaded 32-bit applications as well or better than OS/2 does, has better and more valuable bonus software, and doesn't require any more resources than OS/2 does, OS/2's prospects for ultimate victory will be dim. On the other hand, if OS/2 Warp turns out to have a decisive advantage over the shipping version of Windows 95 on objective measures that will really matter to users, Microsoft could be well on its way toward becoming the WordStar of the late 1990s.

I'm looking forward to seeing whether the Windows 95 "public" beta starts on schedule in January 1995 or not (as, according to sources I generally find reliable, was the plan as of last October) and to seeing just how well Windows 95's first non-NDA beta stacks up against the shipping OS/2 Warp. If Microsoft has a beta on the streets by Valentine's day that really blows OS/2 Warp away, I'll have to start doing some serious reassessing of my views of the future of the industry. On the other hand, if the beta turns out to be unimpressive (or delayed), I might even consider revising my already quite upbeat views of OS/2's prospects in an even more upward direction. I can hardly wait!

Will Zachmann, a well-known computer-industry analyst, is the founder and president of Canopus Research, based in Duxbury, Mass. He is also a former vice-president for corporate research of International Data Corp. You can reach him on CompuServe at 76004,3657, or on his popular CAN-OPUS forum.



BakupWiz™

OS/2 BackupWiz™ is the SCSI tape backup solution you have been looking for! Designed to exploit OS/2's multiple threading, BackupWiz gives you a quick and reliable method to completely back up your OS/2 system. HPFS and FAT

file systems are supported and Extended Attributes, Long File Names, System files, and the Workplace Shell are backed up. You can even restore your entire OS/2 boot volume from tape!

Ease of use is another of OS/2 BackupWiz's strong points. A simple, character oriented menu interface and command line operation are provided. OS/2 BackupWiz comes with support for most 1/4", 4mm (DAT), and 8mm tape devices. BackupWiz can also backup to other hard drives, file servers, minis/mainframes via TCP/IP, and removable drives including Bernoulli, Syquest, diskette, and magneto optical. There is even a version of OS/2 BackupWiz that supports many of the automatic tape changer mechanisms. Any SCSI host adapter that has an ADD driver can be used with OS/2 BackupWiz.

PCX also works hard to keep you satisfied after the sale with outstanding customer support. Being a small and aggressive company means that we can respond to your needs that much quicker.

OS/2 BackupWiz is priced at \$149 (autochanger version \$399). PCX also has a competitive upgrade program where you can purchase OS/2 BackupWiz for just \$49 by sending in an eligible competing product. We offer a 30 day money back guarantee to protect you in case OS/2 BackupWiz does not work for you! Call our toll free number and order today!



PortaTape™

PortaTape™ is your complete portable tape backup solution for OS/2. Using high speed SCSI tape devices, the PortaTape line offers capacities ranging

from 250 megabytes to 10 gigabytes. Offering backup speeds from 6 to over 18 megabytes per minute when using a high speed, bidirectional printer port, units in the PortaTape series are priced from \$995.

Members of the PortaTape series utilize a range of SCSI tape drives including 1/4 inch, 4mm, and 8 mm mounted in low profile external enclosures. Connection to the host system is via the system's parallel printer port, which may be utilized concurrently with tape drive operation. A copy of OS/2 BackupWiz

is included with each PortaTape.

PCX also markets a complete line of standard SCSI tape backup units ranging in capacity from 250mB to over 10gB. Available in both internal and external models, these units are priced from \$550. For very large backup needs, PCX offers robotic tape loader mechanisms from 48gB to over 1 terabyte.

LinkWiz™ transfers files between OS/2 and/or DOS/Windows systems, over parallel cable, at 5 megabytes per minute – several times faster than any other file transfer utility.

Now... transfer files at up to 5 megabytes per minute between OS/2 and OS/2, or OS/2 and DOS/Windows, or DOS/Windows and DOS/Windows, or OS/2 and UNIX, or DOS/Windows and UNIX.

If you have lots of time on your hands, stay with your old transfer utility. But... if you want *warp speed* file transfers of large production size files and directories, then LinkWiz™ is for you! LinkWiz was developed to unleash the power of OS/2.

- Installs and runs in only minutes. ■ Intuitive operation allows anyone to make simple or massive *warp speed* data transfer between systems. ■ Special parallel and serial transfer cables are included.
 - Supports Presentation Manager, long file names, extended attributes and blindingly fast 32 bit I/O. ■ Clone hundreds of other OS/2 systems from a single "seed" OS/2 system.
 - DOS/Windows and OS/2 version list price is \$149.
- Call about our competitive upgrade offer.

If you are ready for a next generation *warp speed* performance file transfer utility... try LinkWiz now! Call or fax your order today!

LinkWiz™



FOR MORE INFORMATION OR TO ORDER CALL:

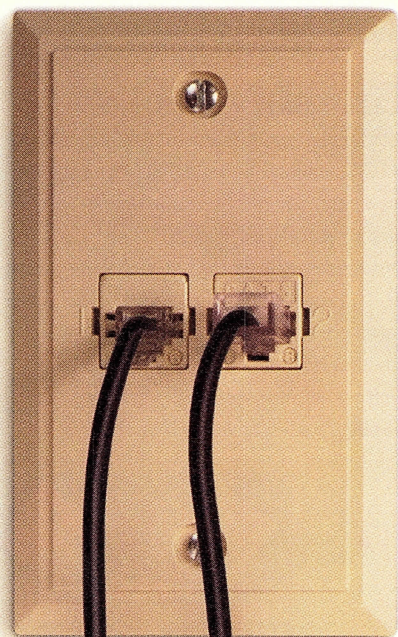
1-800-800-4PCX

PCX

3525 Del Mar Heights Road, Suite 313, San Diego, CA 92130
(619) 259-9797 · Fax: (619) 481-6474



Shipping is non-refundable. No cancellations on special order items. 20% restocking fee on hardware refunds within 30 days. No refunds or exchanges after 30 days. Prices subject to change.



**The shortest distance
between computers isn't a
straight line, it's two lines.
So we created MultiCard.®**

2

lines, two functions

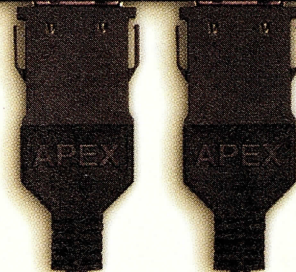
and simultaneous operation. Introducing MultiCard®
from Apex Data, your next step in mobile productivity.

MultiCard® combines a high speed data/fax modem and
Ethernet adapter in one card. Connect the modem to the
phone jack, the Ethernet adapter to the LAN and you're wired
into a new generation of notebook computing.

MultiCard® is made for multi-tasking. Log on to any on-
line service without logging off the network. Send and receive
faxes while perusing your E-mail. And for those of you with single
PCMCIA slot notebooks, we just doubled your productivity.

MultiCard® comes to you ready to run with
data and fax software from SofNet. Plus drivers for
OS/2 LAN Server, Novell and DOS/Windows.

MultiCard® is truly the next step in mobile
computing. And when you work with Apex Data,
you can be sure it's a step in the right direction.



COMPAQ
Qualified
Solution



*To find out more about two lines being better
than one call 1-800-841-APEX*

In Envy of Reality

**C SCRIPTING FOR PEOPLE WHO THINK
REXX IS TOO COMPLICATED** BY BRIAN PROFFIT



CEnv 1.009

The author of this package says that the name is a derivative of its function, which is to provide a miniature C Environment for people who are developing batch programs. I have no doubts, though, that the name really stands for "C envy," a syndrome with which the authors clearly believe all REXX users are smitten. In fact, the product's Introduction describes people who are not using C as being perhaps "otherwise brilliant," but having "internal memory conflicts or logic faults in their brains." This product was designed for the people who are mentally challenged in this way.

CEnv is an interpreter environment based on C minus minus (Cmm), a subset of C. After all, as the manual says "it would not be practical to provide the [full] power of C to the peon writers of batch files and macro scripts. Imagine the damage that could be caused... Besides, let's face it, not everyone is up to the C programmer's level of sophistication..."

A C programmer's dream

To be fair, though, if you are a C programmer, this product really is a dream come true. It lets you develop batch programs, scaffolding code, or proof-of-concept programs quickly, without going through the compile-and-link process. The only things you really sacrifice are execution speed and pointers. To a dedicated C person, pointers sound like a lot to give up,

Listing 1: Embedding a CEnv program in a REXX file.

```

/*****
*** SUM.CMD - Uses CEnv to add numeric parameters passed to
*** the program from the command line, placing the sum
*** in the new environment variable SUM
*****/

'call CEnvSet %0.cmd %1 %2 %3 %4 %5 %6 %7 %8 %9'
SIGNAL CENVI_EXIT

main(argc,argv)
{
    SUM = 0;
    for ( n = 1; n < argc; n++ )
        SUM += atoi(argv[n])
}

CENVI_EXIT;

```

but creative use of dynamic arrays can overcome many of those difficulties. Type declarations are also absent, but that's more a blessing than a sacrifice. Everything is either **byte**, **long (integer)**, or **float**, and strings are simply arrays of bytes.

Other than those small shortcomings, CEnv is a surprisingly rich environment, complete with **#include** and structures. Most functions in the standard C library are present, although they are modified to support reference calls instead of pointers. Some nice library extensions are included, such as functions for manipulation of Binary Large Objects (BLOBs), and a **spawn** function.

Programs can be bound into stand-alone executables, but the

process is not a compilation. It simply packages the CEnv run-time modules with your source code, and the program still runs interpretively. The fact that CEnv programs are interpreted is important—just because you are using a C-like language does not mean your programs will run at the speed of C.

Other problems can come up when using a non-standard batch language. For example, you can't call CEnv programs simply by entering their name on the command line, as you would with REXX programs or executables, you have to call CEnv itself and pass the program's name as a parameter. To get around this limitation, Nombas has provided a technique (which they openly refer to as

a "kludge") that allows you to call CEnv from within a REXX program and then have CEnv process parts of the REXX source code. In addition, you can't directly alter environment variables. A function is included to write environment parameters to a file and read them back for resetting. By putting those problems and work-arounds together, you get a convoluted technique for embedding a CEnv program in a REXX file so that it can be called from the command line, which is shown in Listing 1.

If you're a C programmer, you're probably thrilled that you could write a program like this without the need for compiling and linking. If you're a REXX programmer, you're probably wondering why Greek was required.

Cross-platform support

DOS, Windows, and OS/2 versions of CEnv exist, so, as long as you stick to the basics, you can write programs that will execute in any of these environments. Platform-specific enhancements, such as the ability to call DLLs, will not work outside the target environment.

The Cmm language is available as a separate DLL, so application developers who wish to restrict their audience to C programmers can use Cmm as the macro language for their product—which makes it easier for the application vendor, since they can use the same macro language for the DOS, Windows, and OS/2 versions of their product. But the goal should be to make things easier for users. Because REXX is the standard OS/2 procedures language, I would encourage all application developers to adopt it as the macro language for their OS/2 products (with the possible exception of those developing other C tools). Nombas plans to add an NT version, a PM version (instead of this character-based version), and a debugger.

Glee or flee

The patronizing tone of the manual's Introduction clearly defines the audience of this product. If you are a devoted C lover, you will quite likely be delighted to find a compiler-free subset of the language with which to perform quick tasks in DOS, Windows, and OS/2. If you are not a C programmer, you will probably find CEnv obscure and barely comprehensible. Don't fret about whether that means you are mentally challenged, simply join the hundreds of thousands of people who are happily writing REXX programs.

3D Virtual Reality Roomplanner for Windows

The success or failure of Windows applications running under OS/2 is a common topic among OS/2 user groups, bulletin boards, and the OS/2 Magazine section of the OS2-AVEND forum on CompuServe. Because of all the interest, I will begin devoting a small amount of space, periodically, to popular Windows programs and their best Win-OS/2 settings. They will not be detailed product reviews, just a quick guide to their use with OS/2—often no more than a table of changes to the default Win-OS/2 settings.

One program that continues to surprise market watchers with its presence on bestseller lists is the 3D Virtual Reality Room Planner from Cosmi. This program can run in a Win-OS/2 session (full-screen or windowed), using the default Win-OS/2 settings, although getting started isn't necessarily smooth. I tried installing it on three different machines and with three different flavors of OS/2 and got a Windows error each time—the infamous "An application has caused an error..." message. I was able to select Ignore in each case and successfully continue installation.

When you first run 3DVR, you get a normal window, menu bar, and icon bar, but the main area of

the window in which you lay out your room design is totally black. You can't see objects as you create them. While Cosmi's first response to my tech-support call was the noxious "It isn't supported under OS/2," to their credit, they worked with me to help find the problem. There appears to be some breakdown in the interaction between 3DVR and the Win-OS/2 video driver, which they interrogate to determine the starting palette. The solution, fortunately, is relatively simple. Select Settings/Colors from the menu bar and change the colors of the workspace (pale yellow works well) and ruler bars (light gray seems best). From that point on, you should be able to run the program normally.

RESOURCES:

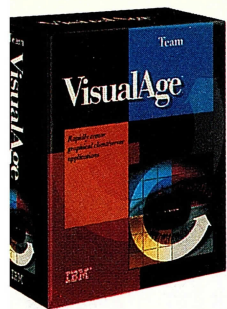
CEnv 1.009 (\$38 for a registered version)

Nombas
P.O. Box 875
Medford, MA 02155-007
(617) 391-6595
CompuServe: 72212,1622
Internet: bsn@world.std.com
A shareware version with restricted libraries is available in the OS/2 forums on CompuServe.
READER SERVICE NO. 151

3D Virtual Reality Roomplanner (\$14.95)

Cosmi
2600 Homestead Pl.
Rancho Dominguez, CA 90220
(310) 833-2000 (ask for purchasing)
Fax: (310) 886-3500
READER SERVICE NO. 152

Brian Proffitt has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2 and is a contributing editor for OS/2 Developer and OS/2 Magazine. He can be reached on CompuServe at 75300,1466, or Internet 75300.1466@compuserve.com.



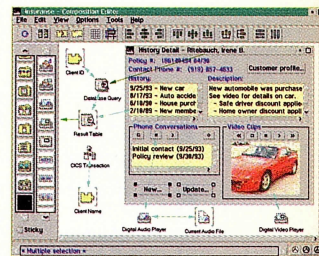
Why settle for a power tool when you can have a power workshop?

IBM® VisualAge™ is the only tool of its class that offers full integration of visual programming, object-oriented environment, and best-of-breed team support.

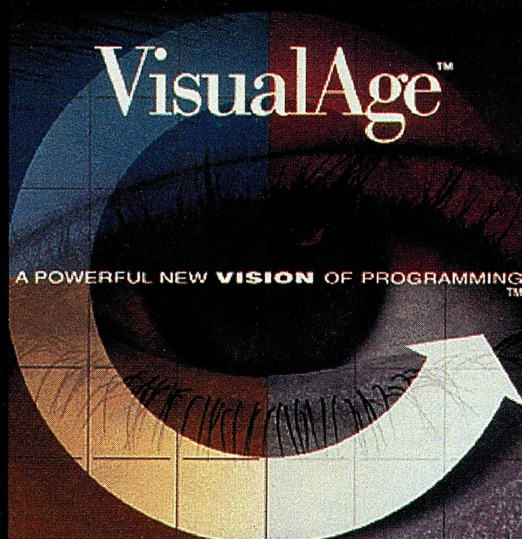
Now
available
for
Windows

VisualAge benefits:

- Dramatically reduces time to create applications
- Provides the benefits of object-oriented (OO) technology without the learning curve
- Increases development productivity through the use and reuse of enterprise data & legacy code
- Provides interoperability by supporting multiple IBM and non-IBM operating system platforms, communication interfaces, and databases
- Provides application portability to multiple operating system platforms
- Scales up for line-of-business applications by supporting team development and by allowing users to extend the product itself



Call Softmart at 800-272-6519 to order VisualAge or request your FREE IBM VisualAge Version 2.0 Evaluation! *



Softmart®
We Sell Productivity

Softmart Product Codes:

ISIBM 34	\$1398.00	Standard OS/2
ISIBM 36	\$1398.00	Standard Win
UGISIBM 26	\$999.00	Comp. Upgr. OS/2
UGISIBM 27	\$999.00	Comp. Upgr. Win

Reader Service No. 12

VisualAge Evaluation includes OS/2 & Windows versions and also includes Smalltalk. Evaluation for 60 days from first day of installation. Prices good through January 31, 1995 and LIMITED time. CD offer good while supplies last. Prices and products are subject to change without notice. Prices do not include shipping and handling. Sales tax charged where applicable. IBM is a registered trademark and VisualAge is a trademark of International Business Machines Corporation. Softmart is a registered services mark of Softmart, Inc. COPYRIGHT© 1994. Softmart, Inc.

Inside OS/2 Warp version 3

They say that first impressions are often the most accurate. Maybe that's true, maybe not—but first impressions often set a tone that lasts throughout a relationship. Let's take a look at the highlights of the new release of OS/2, and see which things are screaming out for attention.

The first thing you will notice about OS/2 3.0 is that it isn't called OS/2 3.0. To jazz things up in an increasingly consumer-oriented market, IBM kept the code name Warp, which had been assigned to the product during its development cycle. To be honest, I hope this trend that doesn't catch on. For example, Borland had a product code-named Chocolate, but if you were looking for a C++ development system, would you go to your retailer and ask for a box of Chocolate?

The second thing you will notice is the size of the product. OS/2 Warp version 3 arrives on two compact discs or 35 floppy disks. Of course, much of its size is due to the addition of the Bonus Pak. For now, just note that if you have been trying to decide whether to buy a CD-ROM drive, installing OS/2 Warp from floppy may be sufficiently painful to help you make the decision.

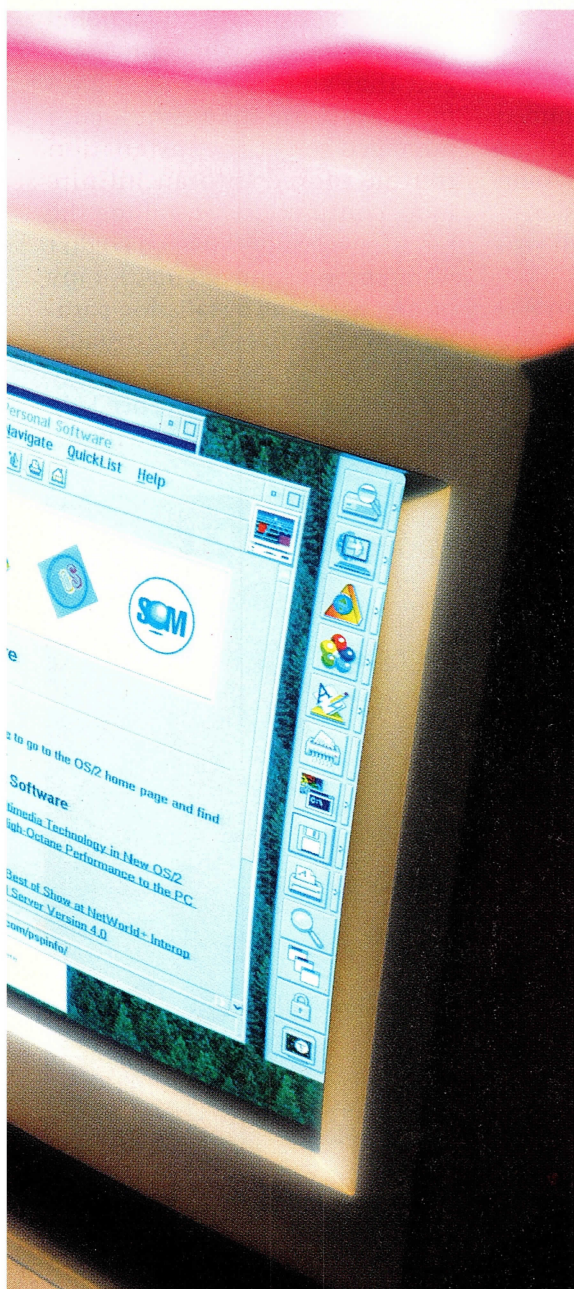
Perhaps the biggest news is the hardware required to support this new version. OS/2 Warp runs on systems with as little as 4MB of memory. Really. I was even able to run a Windows application with reasonable response time. It's not ideal, of course, but it does provide the millions of people with 4MB systems the opportunity to try OS/2. Let me be the first to welcome all of the Windows refugees we'll be seeing as new readers.

And make no mistake—Windows users are IBM's target for this product. OS/2 Warp's redesigned tutorial includes new features designed specifically to explain the Workplace Shell to Windows users. Windows 3.x owners who choose to stay loyal to Microsoft, of course, will have



A test drive of IBM's revamped operating system

BY BRIAN PROFFIT



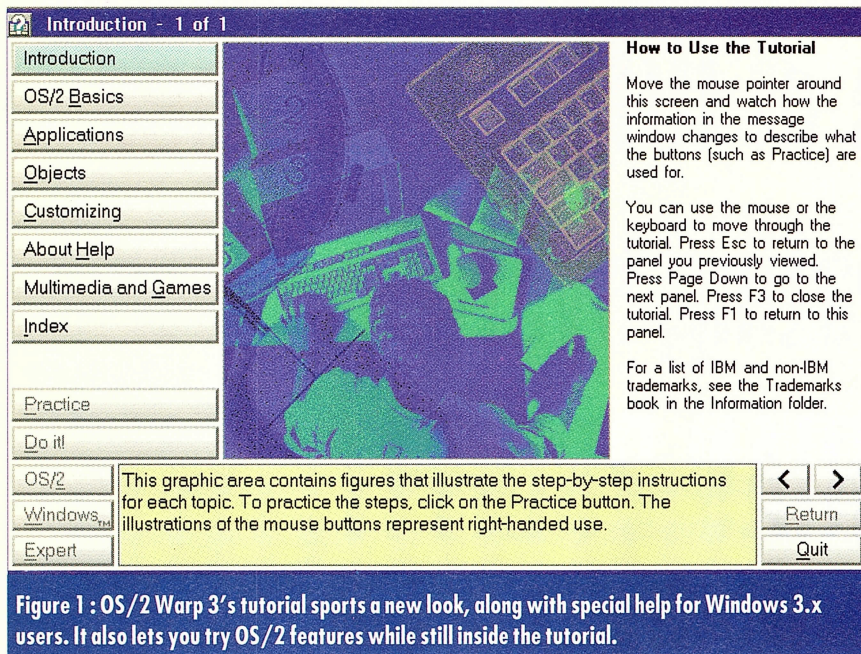
to go through a similar learning process if they migrate to Windows 95 (*nee* Chicago) and its Workplace Shell look-alike interface.

OS/2 Warp doesn't include Win-OS/2 support. If you want to run Windows programs, you must have DOS and Windows on your system *before* installing OS/2 Warp. (By the way, I recommend that you load Windows and close all of your program groups within Program Manager before starting OS/2 installation. I ran into an intermittent bug that occasionally prevented open groups from being migrated to the OS/2 desktop.) IBM promises that a new "fullpack" version of OS/2 Warp will be available Real Soon Now, with all of the new features and Win-OS/2. Don't expect it before the second quarter of 1995. So, if you're using the OS/2 2.1 or OS/2 2.11 (as opposed to OS/2 for Windows), this initial release of OS/2 Warp 3 is *not* an upgrade that you can easily make. In any event, IBM has increased OS/2's Windows 3.x compatibility; the new version works not only with Windows 3.1, but also with Windows 3.11 and Windows for Workgroups 3.11.

If you use popular Windows applications (and most OS/2 users still do), you'll be pleased to learn that they may load much more quickly under OS/2 Warp than they did under earlier versions of OS/2. If you activate the Fast Load option in the System Settings Notebook, much of the Windows overhead is loaded automatically during the boot process. When you start your Windows application, then, only the program itself needs to be brought into memory.

New, simplified installation

Installation of OS/2 Warp may be quite a bit simpler—at least for those who want to install all of its features, have 60MB free hard-disk space (55MB for OS/2, plus 5MB for temporary files and swap space), want to install OS/2 on



their c: drive, don't need to format the c: partition, and don't want OS/2 installed on an HPFS partition. IBM is promoting this Easy Installation option as a "one-button install." That promise only holds true for the most vanilla of hardware configurations. Most people will still have to identify certain hardware components that OS/2 didn't detect properly. In fact, some devices that were identified correctly in earlier versions and during beta test suddenly aren't found properly with the final code.

You may be surprised to find that the multimedia hardware OS/2 has detected on your system (and for which it plans to install support) is represented by a string of cryptic characters. OS/2 Warp found this fascinating device on both systems I've tried so far, and they have virtually nothing in common. I also had difficulty with video drivers on both systems. On the first PC, OS/2 correctly identified the video chipset, but adamantly refused to give me support for the chip's 256-color mode, leaving me with only 16 colors (unless I run DOS or Windows). What

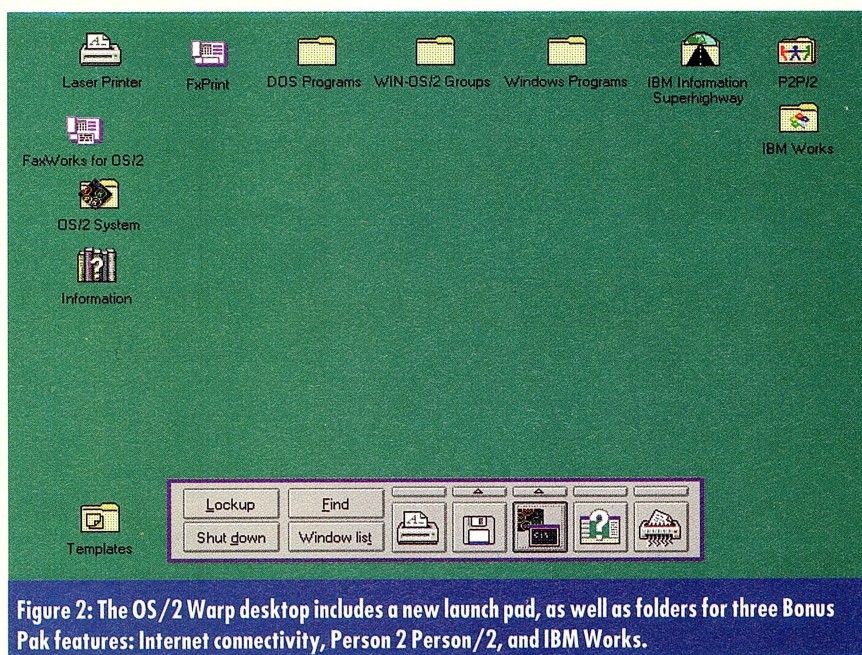
bizarre hardware thus confounded IBM's flagship operating system? An IBM ThinkPad 350C—a system for which IBM had a beta version of a 256-color video driver a full year ago.

The second test PC had an ATI Graphics Ultra and, again, OS/2 Warp installed only straight VGA rather than 256 colors. The *User's Guide* includes specific instructions

on installing for the Graphics Ultra. They don't work. Don't say you weren't warned—I pointed out in December's "Dateline: OS/2" column (pp. 21-24) that IBM had painted itself into a corner that would force OS/2 Warp's release before it had been sufficiently tested. In fact, at least one installation fix was slipstreamed into OS/2 Warp during its first few weeks of production.

Room for tinkering

You still have the option to select Advanced Installation for greater control of installation and configuration. Keep in mind that the dialog window showing available and required disk space is still a none-too-accurate approximation. I suggest that you have at least 2MB more available than is needed. I managed to get the installation routine locked into an infinite loop, continuously installing the same font cartridges (which I didn't want anyway) and .dll files for my printer when the installation partition became full (after the installation program told me I had nearly 2MB more available than I needed). The swap file was on a different par-



tion with plenty of free space and never grew over 1MB. After removing a few files, installation was finally able to complete and, as it removed its temporary files, that partition ended up with 5MB of free space!

IBM enhanced the first part of the installation to make it easier for those of us who like to do some heavy tinkering. Pressing <F3> before the installation asks you to reboot will bring up an OS/2 command prompt. Even better, a new tiny text editor (TEDIT) is included to allow command-line editing at this phase. (Those who prefer character-based editors will be pleased to find that TEDIT remains after installation, although it doesn't show up in a folder.) This feature is especially valuable when you are trying to install OS/2 into a tight disk partition. You can edit *config.sys* before booting to begin

the second part of the installation. Modifying the **swappath** statement to put the swap file in a different partition frees up those megabytes for storage of the operating system itself.

When you reboot, selecting installation options and copying additional data from diskette takes place from a Workplace Shell desktop. Moving the installation-progress window reveals that some on-line documentation (the *readme* file, the Master Help Index, and the Glossary) and access to a windowed command prompt are already available. Browsing the *readme* is a reasonable way to help pass the time while you're stuffing a few dozen floppy disks into your PC's hungry drives.

Polishing the desktop

Once installation is complete and you boot OS/2 Warp for the first

time, you'll immediately notice several differences from OS/2 2.x. Those of you with multimedia sound support will hear a new sound during the startup process: the incredibly annoying trumpet has been replaced by a more soothing stereo sound effect. The applause during shutdown (which always seemed bizarre—you're cheering me for leaving OS/2?) has also been replaced by something more appropriate.

The tutorial, which starts up automatically the first time you boot OS/2 Warp, has changed dramatically, as shown in Figure 1. It is much more animated, with demonstrations of the techniques it describes. It also provides Practice and Do It modes to let you use those techniques on your real desktop and programs. It also includes special features designed to help Windows 3.x users migrate to OS/2

Order OS/2 Warp Today! 1-800-804-8588

Prices,
Customer
Satisfaction

OS/2

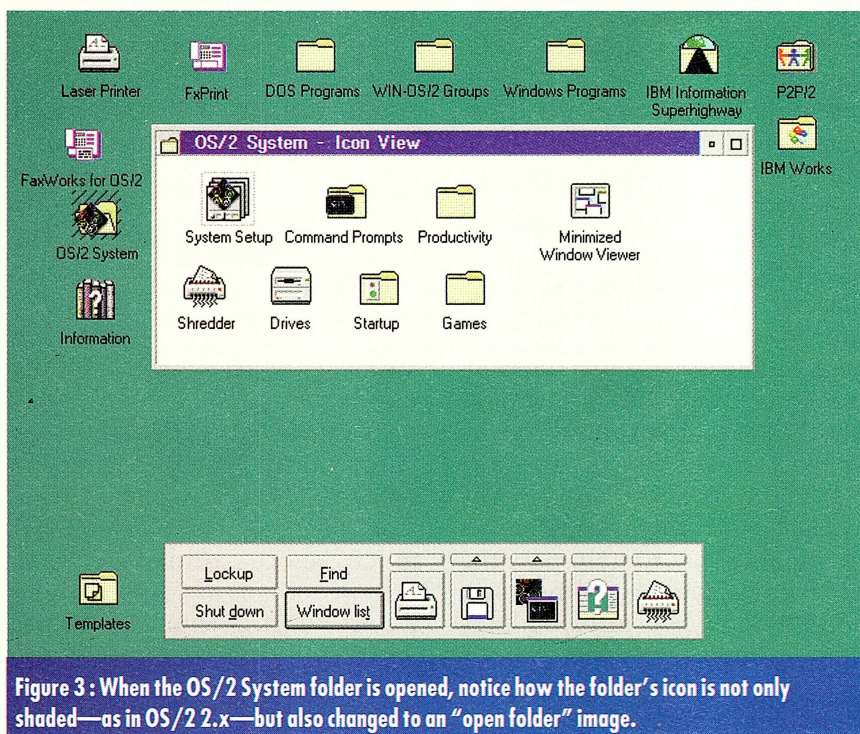
APPLICATIONS

- Development Tools
- Productivity Software
- Communications & Networking
- Backup Software
- Graphics & CAD
- Utility Software
- Many IBM and Non-IBM Software are Available



OS+ Resource For Leading Edge Software
10140 Artesia Pl., Ste. C, Bellflower, CA 90706

Reader Service No. 13



run a program rather than opening its Settings notebook because your mouse finger slipped on the Open entry in the right-mouse pop-up menu? Today, Settings is an entry of its own on the pop-up menu. Another great “oops-reducer” is the Undo Arrange option that shows up in the menu after you’ve done an Arrange. If you’ve ever destroyed your carefully crafted icon setup, you’ll appreciate this option.

If you’ve *really* messed up your desktop, *config.sys*, or some other critical aspect of your system, you’ll be pleased to discover that OS/2 can now help you recover from these things without requiring a tedious reboot from the installation disks. Press <Alt+F1> as soon as “OS/2” appears in the upper left corner during the boot process, and you will be presented with a panel providing a wide range of system recovery options—including restoring an earlier desktop layout. If you’re trying to diagnose problems loading specific device drivers, press <Alt+F2> and each device driver will be displayed as it is loaded.

Multimedia support integrated

Multimedia Presentation Manager/2 (MMPM/2) support feels much more like an integrated part of the operating system, rather than an add-on feature. Audio, video, and CD-ROM hardware are detected automatically (more or less) during OS/2 Warp installation. Support for several new devices, including Kodak PhotoCD-capable devices, is also included. IBM even added support for Hauppauge’s

Warp.

Closing the tutorial reveals a much more colorful desktop, as shown in Figure 2. It also offers many more customization options, with a new Scheme Palette filled with colorful suggestions. The icons have also been improved with a three-dimensional appearance. Some have even been “animated,” with changes in appearance. Look again at Figure 2 to see the OS/2 System icon. Now, look at Figure 3 to see how it changes when the folder is opened. Not the sort of thing that would threaten Walt Disney’s animation wizards, but pretty far out for IBM.

Another change really helps prevent clutter on the desktop. An option in the System Object’s settings folder tells OS/2 Warp to automatically close a folder when an object within it is opened. Of course, you can also get to more of your favorite things without even opening a folder. The new object at the bottom of the desktop is the Launch Pad, shown in Figure 4. Items found on the Launch Pad can be opened with a single click.

One could argue that putting the printer and shredder on the Launch Pad makes little sense since they are rarely opened, but that’s not the point. It’s easy enough to move them back to the desktop where they belong and add your own programs to the Launch Pad. I strongly suggest you browse the help text for the Launch Pad, and explore its options to see which format works best for you. Conceptually similar to folders, the Launch Pad allows you to add items through the use of drawers, without expanding the window. Icons with a small arrow above them have a drawer associated with them. Click on the arrow to see the objects within that drawer, as shown in Figure 5.

When using OS/2 2.x, how many times did you accidentally

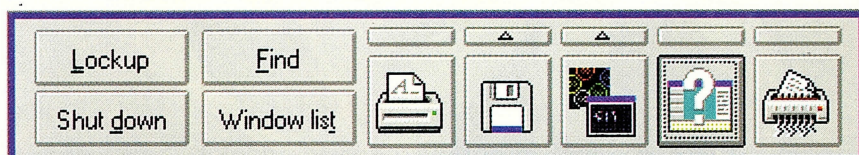


Figure 4: OS/2s’ push-button launch pad has four fixed buttons, plus user-configurable buttons and drawers. The launch bar can also be displayed vertically, or made smaller.

WIN/TV card.

IBM is trying to position OS/2 as a multimedia platform, and OS/2 Warp offers two specific features to make the point. First, they added support for the MPEG standard—a way of compressing multimedia files so they take up far less disk space. Second, they added a new application programming interface (API) specifically devoted to multimedia applications.

In a related move, designed to help OS/2 Warp in the small office/home market, IBM took the time to add hundreds of new programs to the migration database, including more than 100 games. The default DOS and Windows settings don't lend themselves well to good performance of these computer-intensive programs. Now, OS/2 Warp will automatically change those settings when it detects a game it recognizes. You don't have to manually load the

migration database to make the change, either. When you tear off a

new program object from the Templates folder, OS/2 Warp

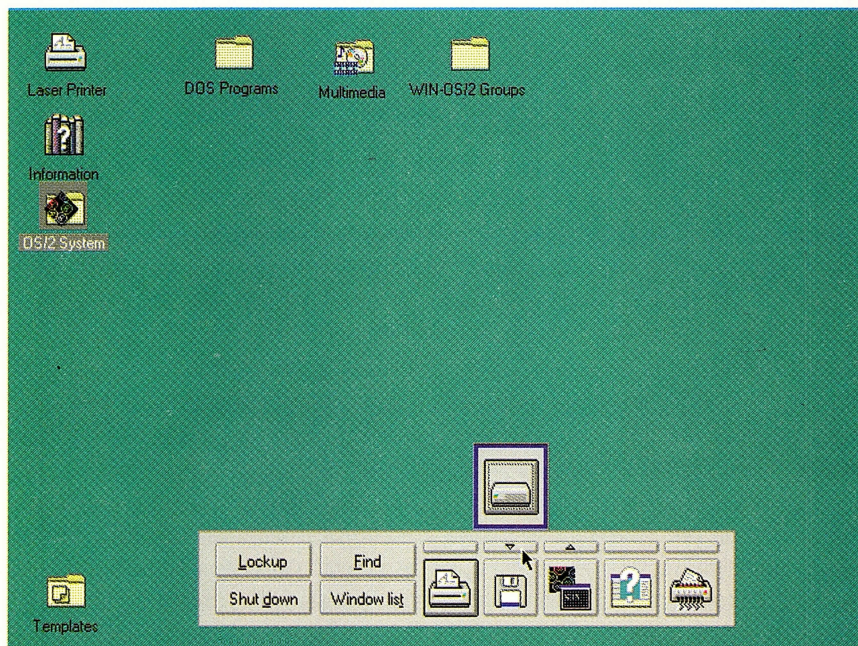


Figure 5: The launch bar, with one of the "drawers" opened to reveal another program. It takes two clicks to launch applications or data files stored inside a drawer.

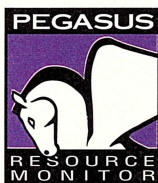
So, you're running a 32-bit, protected mode, preemptive multi-tasking, segmented virtual memory operating system . . .

Want to See What's Under the Hood?



Introducing Pegasus Resource Monitor for OS/2 2.x. The first affordable, professional performance monitor for OS/2 desktops and servers.

Pegasus unlocks the secrets of OS/2 so you can drive your system harder and faster. Pegasus reaches into the OS/2 kernel to grab accurate sta-



tistics on CPU, memory and disk performance. Other OS/2 monitors saturate system resources. Pegasus also tracks all OS/2 foreground and background activity, including DOS and Windows applications, and does it all with low overhead.

With Pegasus, you see inside OS/2 in real time or access comprehensive performance statistics using the Pegasus REXX extensions for detailed analysis after the fact. Exceptions pop-up to alert you automatically when problems are occurring, and you can display a concise graphical view of systems performance on your desktop at all times.

Pegasus Resource Monitor is just \$129, and the competitive upgrade, only \$99.

Also available:

Pegasus Resource Monitor for SMP.
OSRM2 - the ultimate performance and capacity planning tool for LAN's.

1-800-OS2-OS29

ON
SOFTWARE & SERVICES, INC.
DEMAND

1100 Fifth Avenue South, Suite 208
Naples, FL 33940

Pegasus Resource Monitor is a trademark of C.O.L. Systems, Inc. All other company, products and brand names are trademarks or registered trademarks of their respective holders.

A Pack of Bonuses

Looking for more than an operating system in your operating-system box? IBM has decided to package OS/2 Warp 3 with a second CD-ROM, or a little box full of floppy disks, containing a BonusPak of light-weight productivity applications. Replacing the frankly embarrassing "applets" included with OS/2 2.x, OS/2 Warp's BonusPak is a great value, if you believe that it is indeed "free." (We suspect that large corporate customers can probably negotiate lower prices for their massive site licenses by purchasing OS/2 without the BonusPak.)

According to IBM, different "versions" of OS/2 will vary in that their BonusPak contents will have increased functionality, with BonusPaks aimed at corporate network clients, network servers, and potentially, specialized users or markets. For example, the "OS/2 LAN Client" package, which entered beta test in late 1994, adds network requesters for LAN Server, NetWare, and LAN Distance, enhanced TCP/IP software, and network administration tools to its BonusPak.

So far, all that we can see and touch is the base-level OS/2 Warp 3's BonusPak. The flagship of the BonusPak is IBM's built-in Internet connectivity software, which includes (one hopes) everything you should need to navigate the Internet—once, of course, you sign up with a suitable Internet service provider (unless you're already connected).

If you're unfamiliar with the Internet, think of cellular telephones, and imagine that IBM provided a free cellular phone in the OS/2 Warp package. To use it, you'd need to sign up with a cellular service provider, such as CellularOne or AirTouch. It's the same thing with Internet connectivity: If you want dial-up access, you need to contract with a service provider such as CRL, Delphi, Advantis, or a host of others. Thoughtfully, IBM has included automatic sign-up for Advantis—a joint venture between IBM and Sears. Unfortunately, they don't make it clear that the Internet connectivity software works just fine if you use nearly *any* Internet provider that supports SLIP-type connections, and that you don't *have* to use Advantis.

The Internet connectivity utilities in the BonusPak include programs that appear esoteric to non-Internet users, but are a complete set of tools for the trade: gopher, ftp, telnet, a multimedia viewer, a newsreader, and a "lite" version of IBM's UltiMail/2. Also included are a native OS/2 version of a CompuServe graphical front-end called CompuServe Information Manager, and a general telecommunications package from Hilgraeve called HyperAccess Lite.

IBM compromised to include a World-Wide Web browser called WebExplorer (similar in functionality to the better-known Mosaic) with OS/2 Warp, but it wasn't ready in time. Early versions are shipping without it. Customers can download WebExplorer—but at the time of writing, it's only available from Advantis, meaning that if you want to use a different service provider, or if you already have direct Internet access, you'll need to sign up with Advantis anyway to download WebExplorer. Let's hope that IBM fixes that oversight—and soon.

Connectivity is a recurring theme throughout the BonusPak. SofNet's FaxWorks is a device driver for sending faxes through fax/data modems. IBM's Person to Person/2 is real-time conferencing software for local-area networks.

An integrated applications suite, IBM Works, which is an enhanced version of Footprint Works, is also in the box. IBM Works includes a word processor, database, spreadsheet, and presentation-graphics utility. Somewhat integrated into IBM Works is a personal-information manager from Arcadia Technologies. The BonusPak also contains IBM's Video IN/2 video-capture software.

We'll have a full review of the tools included in the BonusPak in an upcoming issue of *OS/2 Magazine*. In relevant future product comparisons, we'll also use the base-level BonusPak's applications as a "least common denominator" to help judge the value of IBM and third-party software add-ons.

It's clear that including the BonusPak makes OS/2 Warp an outstanding value for the small-office and home buyer, and for new computer users. Corporate customers, who have already chosen their third-party productivity applications, will probably find less value in this collection of largely lower-end "works" and "lite" products, but might appreciate the easy installation of Internet access software—Alan Zeichick.

checks the program you enter there against the migration database automatically.

Application impact

A much more sophisticated version of IBM's System Object Model (SOM) is included in OS/2 Warp, which should help developers write applications that fit well within the Workplace Shell. Further, a separate announcement made at the same time as OS/2 Warp may have the greatest impact on its sales. The biggest inhibitor to OS/2's acceptance has always been the paucity of available high-quality OS/2-exploitative applications. Software makers have been hesitant to invest too much development time and money into OS/2, since it takes away from their Windows development. (There are very few OS/2-only software developers.) As a result, most developers have relied on tools like Mirrors that allowed them to market an OS/2 version of their product with minimal changes to their Windows source code. Unfortunately, such applications suffer from problems, such as slow performance, and they don't take advantage of OS/2's extra capabilities.

To help resolve this dilemma, IBM has dumped Mirrors and signed a distribution agreement for One Up Corp.'s Source Migration Analysis Reporting Toolset (SMART). One Up has been working with IBM for several years to conduct workshops for developers who are trying to move their code from Windows to OS/2, and this tool is the result of all that experience. SMART analyzes the developers' Windows programs and actually converts parts of those programs directly to OS/2 code. It also provides detailed information and suggestions on how the developer can and should convert the rest of the program. The resulting application doesn't just run on OS/2, it exploits it. This new tool simplifies the migration effort significantly,

and should be enough to move a number of borderline vendors into the OS/2 market. That means new OS/2 applications that are better than (rather than almost as good as) their Windows counterpart should be available soon.

Marketing 101

On the other hand, IBM's support for application developers continues to worsen. Developers who have been loyal to OS/2 for years had their market cut dramatically by the decision to include products such as CompuServe Information Manager and IBM Works in the Bonus Pak. Naturally, they're not too happy about it. But it's not just sour grapes. Do you remember those popular IBM software offerings, Hollywood and Current? No, probably not. In fact, their market impact can be gauged by the fact that IBM not only dropped the products, it disbanded the group responsible for them.

Yet despite the "success" of these products, when the organization was disbanded, IBM rewarded the perpetrators by making them responsible for OS/2 developer relations. Independent developers have been complaining about IBM's support ever since. Two developers of popular OS/2 applications recently told me that when they complained to IBM about the level of help they were getting, the IBM response was that they were welcome to develop for Windows if they preferred.

When OS/2 2.1 came out, I suggested that IBM needed to get the message out strongly, or people would continue to wait for Chicago. Now, more than a year later, I got a dramatic indication of IBM's marketing efforts. On October 20, more than a week after IBM announced OS/2 Warp 3.0 and the same day my shrink-wrapped copy was delivered, a reseller friend of mine received a marketing brochure from IBM. It

was a fancy glossy piece, including a pop-up race car urging them to shift their customers into high gear—with OS/2 2.1.

Still, IBM did announce new agreements under which hardware vendors could pre-load OS/2 on their hardware. Let's hope (unlike with the IBM ThinkPad 350C) they will go to the trouble of providing the right device support for those systems.

Beyond the hoopla

At a suggested retail price of \$129, and a street price under \$100 (IBM claims less than \$80), OS/2 Warp should sell more than twice as many copies as its predecessors. It is, beyond question, the best operating system available for personal computers today and, with its lower hardware requirements, it can run on nearly everyone's computer. The Bonus Pak (see the box on p. 30) adds valuable application

software at no extra cost. Unfortunately, after a little initial marketing from IBM, it will probably still be left to Team OS/2 to promote it.

Brian Proffit has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2, and is a contributing editor to OS/2 Developer and OS/2 Magazine. He can be reached on CompuServe at 75300,1466, or Internet 75300.1466@compuserve.com.

RESOURCE:

OS/2 Warp version 3

Without Win-OS/2 Support, \$129

With Win-OS/2 Support \$199 (not yet available)

IBM Corp.

(800) 342-6672 in U.S.

(800) 465-7999 in Canada

READER SERVICE NO. 153

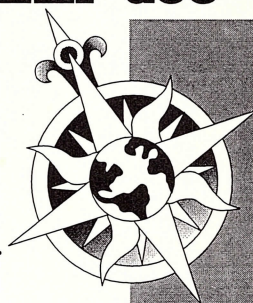
Do you like OS/2® Warp?

No other operating system offers as much for your money, or makes such good use of your PC's capabilities.

You'll love Golden CommPass®

No other CompuServe® navigation software for OS/2 uses your time on-line so efficiently, or exploits OS/2 multi-threading and the Workplace Shell so well.

Scan topics, select files to download, read and reply to messages off line. Then let Golden CommPass speed through your session automatically, saving you money on every call.



"One of those applications that can justify the purchase of OS/2 all by itself."

Brian Proffit, OS/2 Magazine

Call for more information
or download a trial version
from our support forum
(GO GCPSUPPORT).

Creative Systems Programming Corp.
(609)234-1500 Fax (609) 234-1920
Internet:71511.151@CompuServe.com

©1994, Creative Systems Programming Corp. All Rights Reserved.

EDITORS'
CHOICE
AWARD
OS/2
MAGAZINE
1994
V2.11

[illegible]

We explore the issues surrounding object-oriented

For more information, call (800) 441-8826, or (415) 688-4345 for fax-back info, or e-mail us at sd95west@mfi.com.



250 CLASSES ♦ 250 VENDORS ♦ 15,000 DEVELOPMENT PROFESSIONALS

Reader Service No. 16

Breaking The 80/20 Rule

Using OS/2 CID facility to control non-CID-enabled maintenance tasks. By Rob Coventry

Are you responsible for installing and maintaining OS/2 on dozens of PCs? If so, you're probably already familiar with the Configuration, Installation, and Distribution (CID) facility built into OS/2 and many other applications and utilities. CID-enabled software can be installed and maintained using scripts that are run over a network (see "Making it up in Volume," *OS/2 Magazine*, July 1994, pp. 39-45).

Once you start working with CID, it becomes obvious that about 80 percent of the job can be done mainly by installing software applications remotely. Unfortunately, the other 20 percent of the job, customizing and configuring the parts of a software system that aren't naturally CID enabled, takes about 80 percent of your time. For example, *config.sys* and the Workplace Shell aren't CID-enabled, and can't be directly manipulated from CID scripts. Other challenges include partitioning (FDISK) hard disks automatically and applying OS/2 fixes during installation. The good news is that you can break the 80/20 rule with some good planning, a little REXX code, and a couple of little-known tools.

Copy or modify?

Let's look at the first and most common challenge: customizing *config.sys* using CID. Many people modify *config.sys* to fit their specific requirements, such as to change the *libpath*, or to optimize the tuning para-

meters in the *swappath* or *cache* statements.

A popular way of providing a customized *config.sys* to an OS/2 machine is to distribute a "master" copy to target machines. The problem with this method of distributing a master version is maintaining the "master," especially since OS/2 has different configurations for different hardware and most of your users will install an assortment of software. So, your "master" *config.sys* may actually require as many variations as you have machines in your LAN. One way around this problem is to write a REXX routine to modify *config.sys* during the CID process.

OS/2 and most OS/2 applications automatically update *config.sys* during their installation procedure. For the most part, you don't have to second-guess the way the installation programs

modify *config.sys*. Yes, there are always exceptions, but it's easier to manage the incremental change to a *config.sys* than the entire file for every installation scenario you may have. So, it's really easier to modify an existing *config.sys* than to maintain a copy. One handy tool for modifying the *config.sys* files is the *CUBE* program, available freely for downloading (see the box on p. 36).

Changing the Workplace Shell

Another common challenge is creating and maintaining a customized Workplace Shell (WPS), with customized colors and fonts, objects on the desktop,

Fragment 1: An OS/2 CID response file to initialize the WPS.

```
***** OS/2 installation .RSP fragment *****
***** Initialize the IBM Desktop *****
UserExit=@COPY W:\IMG\OS2V21\DESKTOP\INI.RC C:\OS2 >>C:\USEREXIT.LOG
UserExit=@C:\OS2\ATTRIB -R C:\OS2\OS2.INI >>C:\USEREXIT.LOG
UserExit=@C:\OS2\ATTRIB -R C:\OS2\OS2SYS.INI >>C:\USEREXIT.LOG
UserExit=@DEL C:\OS2\OS2.INI >>C:\USEREXIT.LOG
UserExit=@DEL C:\OS2\OS2SYS.INI >>C:\USEREXIT.LOG
UserExit=@C:\OS2\MAKEINI C:\OS2\OS2.INI C:\OS2\INI.RC >>C:\USEREXIT.LOG
UserExit=@C:\OS2\MAKEINI C:\OS2\OS2SYS.INI C:\OS2\INISYS.RC >>C:\USEREXIT.LOG
```


and other settings in a standard way for your organization.

The WPS is controlled by two major facilities: the `\desktop` directory tree and the `os2*.ini` files located in the `\os2` directory. If you're installing OS/2 on a brand-new computer (what we'll call a "pristine" PC), you have the best oppor-

tunity to set up the WPS automatically using your custom settings. If you're trying to roll out a standard WPS desktop on existing OS/2 PCs, you have a bigger challenge. The bottom line is that to maintain the WPS, you have to know the **OBJECTIDs** for the icons and folders you want to maintain.

Icons and folders can be created and maintained using the REXX functions **SysCreateObject**, **SysSetObjectData**, and **SysDestroyObject**. You can use **SysSetObjectData** and **SysDestroyObject** once you know the all-powerful **OBJECTID**. If you don't know the **OBJECTID**, you have to delete and recreate the object or modify the object settings using a Workplace Shell tool.

Unless you use third-party tools, like Development Technology's DeskMan/2, you have no way to find out the **OBJECTIDs** of existing desktop objects. If you don't have such tools, you can't automatically add or change **OBJECTIDs** to desktop objects on existing OS/2 machines.

The solution: Initialize or reinitialize the WPS during a CID process. On a pristine PC, initializing the desktop isn't a problem because the user hasn't modified anything on the desktop, so there won't be any unpleasant surprises for the customers. If you have an existing OS/2 PC, you must reinitialize the desktop automatically. In that case, all of your users' customizations will be lost.

When you are installing OS/2 on a pristine machine, you can initialize the desktop with **UserExits** in the OS/2 response file. During **UserExits** the `\desktop` directory does not yet exist on a pristine machine. If you are migrating from OS/2 1.x to OS/2 2.1 or later, you have to manipulate the directory that contains the desktop structure. I recommend deleting the old OS/2 Desktop directory structure from 1.x in favor of OS/2 2.x and OS/2 Warp 3.0's `\desktop` directory.

During installation on a pristine machine, the code shown in Fragment 1 will remove the OS/2-supplied `.ini` files, then create new `.ini` files using the `makeini.exe` program and sample `.rc` files provided with OS/2. (OS/2's `.rc` files can be used to perform customization on everything from color and font

Fragment 2: File used by `makeini.exe` to create `os2.ini`.

```
/* Use the command MAKEINI NEW.INI INI.RC */
"PM_InstallObject" "Desktop;WPDesktop;?:\" "OBJECTID=<WP_DESKTOP>"
"PM_InstallObject" "Start Here;WPPProgram;<WP_DESKTOP>"

"EXENAME=STHR.EXE;PROGTYPE=PM;STARTUPDIR=\OS2\HELP;HELPPANEL=9278;
OBJECTID=<WP_STHR>"
"PM_InstallObject" "OS/2 System;WPFolder;<WP_DESKTOP>"
"HELPPANEL=4002;NODELETE=YES;ICONRESOURCE=61 PMWP;ICONPOS=8 70;
ICONVIEWPOS=18 60 75 22;OBJECTID=<WP_OS2SYS>"
"PM_InstallObject" "Shredder;WPShredder;<WP_OS2SYS>"
"ICONPOS=90 8;OBJECTID=<WP_SHRED>"
```

Fragment 3: Maintaining folders created by LAN Server and DB2/2.

```
/* *****
/* Clean up work first: Removes certain folders from the desktop */
/* *****
'@echo off'
'IF EXIST C:\DESKTOP\USER_PRO>NUL RD C:\DESKTOP\USER_PRO'
'IF EXIST C:\DESKTOP\LAN_SERV>NUL RD C:\DESKTOP\LAN_SERV'
'IF EXIST C:\DESKTOP\DATABASE>NUL RD C:\DESKTOP\DATABASE'
/* User Profile Management */
classname='WPFolder'
title='UPM'
location='<WP_OS2SYS>'
setup='OBJECTID=<UPM>;'||,
'ICONPOS=20,90'
call BldObj
/* Logon */
classname='WPPProgram'
title='Logon'
location='<UPM>'
setup='OBJECTID=<Logon>;'||,
'EXENAME=Logon.exe;'||,
'PROGTYPE=PM'
Call BldObj
/* ... This is just a fragment of a larger program */
/* BldObj */
BldObj:
call charout , 'Building: ' title
result = SysCreateObject(classname, title, location, setup)
If result=1 Then call charout , '... Object created!'
ELSE call charout , '... Not created! Return
code='result
Say '';
Return
```


selection to folder location and inclusion or exclusion.) The biggest benefit is that you can use the .rc files to assign an **OBJECTID** to every object on your desktop and to manage your folders.

What about reinitializing the desktop on an existing OS/2 PC? First, you'll need to delete the existing directory structure for WPS. Then, Fragment 1 can be used to rebuild your base desktop. The remaining effort is left to using **SysCreateObject**, as shown in Fragment 3.

Inside *ini.rc*

You will notice when you start editing OS/2's default *ini.rc* that nearly all default objects have unique identifiers denoted by **OBJECTID=<objectid>**. The syntax of the **PM_InstallObject** line is similar to REXX's **SysCreateObject** function:

```
"PM_InstallObject" "Object Title;  
ObjectType;<Location>" "Setup"
```

Object Title is the title of the icon when it is created. That's what the user sees under the icon. **ObjectType** is the kind of object. Most often, it is either **WPPProgram** or **WPFolder**, representing programs and folders respectively. **Location** shows where the object will be placed on the WPS. It is an **OBJECTID** of a folder on the desktop or the desktop itself, **WP_DESKTOP**.

Setup can take on a number of different parameters just as in **SysCreateObject**. To the CID programmer, the most important parameter is the **OBJECTID=<objectid>**, shown in Fragment 2.

If you don't want objects placed in their default locations, simply identify a different location in *ini.rc*. In the example shown in Fragment 2, the Shredder is created in the OS/2 System folder instead of on the Desktop. A key thing to remember is that this file is run sequentially by *makeini.exe*. If you attempt to place an object in a location that doesn't exist, the object

will not get created. So, I generally create all my "location" objectIDs at the top of *ini.rc*, then create objects that are contained in them on the bottom of *ini.rc*.

I always delete the object called Drive A. It shows up on the bottom right side of the desktop. The way to get rid of this object is to use the **DELETE** command in *ini.rc* on the line where it is created:

```
"PM_Workplace:InstallDiskOnDesktop  
" "A;DELETE" "ICONPOS=80 8"
```

This is the only way to get rid of this icon automatically. Notice that it doesn't have an **OBJECTID**. Another object that will give you trouble is the Templates folder. If you want the template folder to be installed somewhere other than the desktop, make that change in *ini.rc*.

DON'T MISS OUT

on a single issue of OS/2

OS/2 Developer offers tips and techniques for more efficient computing for the advanced software developers who have recognized the need for 32-bit power.

TO ORDER

For new orders & customer service:
1-800-WANT-OS2
(1-800-926-8672)
or
708-647-5960
FAX 708-647-0537

Written subscription orders:
OS/2 Developer
P O Box 1079
Skokie, IL 60076-8079

Subscription rates for 6 issues:
☐ U.S. - \$39.95
☐ Canada - \$55.95
International surface mail
☐ International air mail - \$69.95
☐ Check inclosed
Charge my:
☐ Visa ☐ MasterCard ☐ AmEx

Card # _____
Exp. Date _____
Signature _____
Name _____
Company _____
Address _____
City _____
State/Zip _____

Make checks payable to Miller Freeman, Inc. Foreign orders must be in U.S. funds. Please allow eight weeks for subscriptions to begin.

Sometimes, it's easier

Most OS/2 applications create folders to hold their icons during the installation process, and a Workplace Shell folder is actually a subdirectory in the `\desktop` tree. (The WPS will be easier to maintain if

you have converted the 1.X OS/2 desktop directory to the OS/2 2.x `\desktop` name.) If you want to automatically add an **OBJECTID** to your application folder, you can delete the application subdirectory out of the `\desktop` tree and recreate it and

its the contents using the REXX **SysCreateObject** function.

In the section of REXX code shown in Fragment 3, the folders created by LAN Server and DB2/2 are deleted, then later recreated using **SysCreateObject**.

Helpful tools.

For some, including this author, writing a routine to do search-and-replace type functions seems like a lot of work. The good news comes in a free program called *CUBE*, which can help reduce the effort. *CUBE* is a REXX command file written by Didier LaFon, an IBM employee in Canada. Although *CUBE* is capable of much more, you can think of it as a search-and-replace engine for text files. The best part of *CUBE* is that it is CID enabled, so it supports response files and log files, and can run across redirected drives.

I use *CUBE* during my installation routines to perform several tasks—only one of which is to change *config.sys*. Let's look at a fragment of REXX code that is called after OS/2 is installed. This particular routine will modify *config.sys* during the installation process.

```
/* Change config.sys */
CUBECFG: Parse Arg SourceDrive WorkstatName ResponseFile
LogFile
TargetFile = 'C:\CONFIG.SYS'
BackupFile = 'C:\CONFIG.001'
ResponseFile = SourceDrive || '\RSP\PHASE1\CUBECFGC || '.RSP'
Say ''
Say ' I am Modifying config.sys.. '
Say ''
Say ''
Say '      USING 'ResponseFile
'CALL' SourcePath'\CUBE.CMD' ResponseFile TargetFile
BackupFile '>>', LogFile
```

For *CUBE*, the response file contains the commands that *CUBE* is to perform. In the example we'll look at next, I have asked *CUBE* to:

- Replace the **"IFS"** line with my own version for tuning purposes.
- Add a **"CACHE"** line for HPFS cache immediately after the **IFS HPFS** line.
- Replace the **"AUTOSTART"** line with my own version.
- Add a line to change the **"RestartObjects"** setting.
- Change the **"SWAPPATH"** to a directory on the *D:* drive.
- Replace the **"SHELL="** line for tuning purposes.

```
REPLINE "IFS=C:\OS2\HPFS" WITH,
"IFS=C:\OS2\HPFS.IFS /CACHE:1024 /CRECL:4 /AUTOCHECK:DE"
ADDLINE "RUN=C:\OS2\CACHE.EXE /LAZY:OFF" (AFTER "IFS=C:\OS2\HPFS.IFS"
REPLINE "SET AUTOSTART=" WITH "SET AUTOSTART=PROGRAMS,TASKLIST,FOLDERS"
ADDLINE "SET RESTARTOBJECTS=STARTUPFOLDERSONLY" (AFTER "SET AUTOSTART="
REPLINE "SWAPPATH=" WITH "SWAPPATH=D:\SWAPPER 2048 6144"
REPLINE "SHELL=C:\OS2\MDOS" WITH "SHELL=C:\OS2\MDOS\COMMAND.COM /E:256
```

As you can see, *CUBE* can be used to perform several tasks during the installation routine—or any time later. The benefit of *CUBE* is that you only need to know the first few characters of a line to perform an action such as **"REPLINE"** which means **RE**place the **LINE** or **"ADDLINE"** which means to **ADD** a **LINE**. Several control verbs can also be used to limit your actions. One such control verb is **"(AFTER)"**, which is used limit the *CUBE* change to occur after a specified line.

You can also use *CUBE* to search and replace strings, delete a line (**Delline**), comment a line (**Commentline**), add a string (**Addstring**), and delete strings (**Delstring**).

You can download *cube.zip* from the *OS/2 Magazine* section on CompuServe (OS2AVEN, library 2).

Partitioning the hard disk

CID can also be used to partition a new computer's hard disk using **FDISK**. Of course, *fdisk.com* is not CID enabled. But you can accomplish the task of partitioning your hard disk during a CID install by using a REXX command file. **FDISK** supports a little-known command line parameter called **/FILE:**, which can contain automated responses to **FDISK**'s questions. Here is a sample command line that can be embedded in a REXX command file:

```
'FDISK.COM /FILE:'ResponseFile '>' 'LogFile
```

The response file is a text file containing a number of parameters supported by the **FDISK** command. In the sample response file we'll look at next, **FDISK** is instructed to delete all partitions that may exist that have a **FAT** or **HPFS** file type. Then, **FDISK** is instructed to create two new partitions—one 90MB startable **FAT** drive and one **HPFS** logical drive that takes up the remaining space on the first physical disk. Keep in mind that **/fstype:fat** is a qualifier used to restrict **/delete:all** to only **FAT** and **HPFS** partitions. Without this qualifier, you run the risk of losing the configuration partition your computer's manufacturer may have installed:

```
/delete:all,/disk:1,/fstype:fat
/delete:all,/disk:1,/fstype:hpfs
/create,/disk:1,/fstype:fat,/size:90,/v
type:1
/create,/disk:1,/fstype:hpfs,/vtype:2,/
start:t
/startable,/start:b,/fstype:fat
```

(note: **FDISK** command parameters are described in detail in the *OS/2* command reference—just type

"help FDISK") When you have completed the partitioning, you will have to reboot from floppy disk since the target machine does not have an operating system. The benefits of using the CID process are consistency and speed. If someone were to manually partition hard drives, they would have to run several manual tasks, all of which are open to potential errors.

If you are using NTS/2, you already have REXX enabled to perform the partitioning commands we just looked at. If you are using NvDM/2, you will have to enable REXX in the pristine environment. To enable REXX in the NvDM/2 environment, the REXX programs must be copied into the NvDM/2 directory. Finally, a simple .pro file is required to start REXX. Here are the detailed steps:

1. Copy *rex.msg* and *rex.h.msg* to *..\ibmnvdm2\pcacode*.
2. Copy *cmd.exe*, *rxqueue.exe*, *rxsub-*

com.exe, *setboot.exe*, and *srvrexx.exe* (packaged with LAN Server and NTS/2) to *..\ibmnvdm2\pcacode\bin*.

3. Copy *rexx.dll*, *rexxapi.dll*, *rexxinit.dll*, and *rexxutil.dll* to *..\ibmnvdm2\pcacode\bin*.
4. Create a .pro file called *rexstart.pro* to initiate REXX for pristine machines.
5. Create a .cmd file called by *rexstart.pro* called *rexstart.cmd*. The *rexstart.pro* file will contain the following:

```
TargetDir = C:\
Section Catalog
Begin
    ObjectType=Software
    GlobalName=CC.REXSTART.CMD.REF.1.0
    Description="Procedure to Load REXX"
End
Section Install
Begin
    Program = SA:\BATCHES\REXSTART.CMD
End
```

The *rexstart.cmd* file should look like:

```
@ECHO OFF
ECHO I am starting the SRVREXX.EXE now!
@DETACH SRVREXX.EXE 1>nul 2>nul
```

Note that, despite its name, *rexstart.cmd* is not a REXX command file. You can't use REXX to start REXX! *Srvrexx.exe* is a program that enables REXX to run in a pristine environment. Once REXX is enabled in the pristine environment, you can use the REXX command file to execute the partitioning task. (For more documentation about this process, check out the IBM RedBook entitled: *Automated Installation for CID Enabled OS/2 V2.x* Document Number GG24-3783-01.)

Rob Coventry has worked for IBM since 1990 and is currently a member of the Midwest Area Consulting and Service Division. He can be reached on CompuServe at 73764,625.

The Award Winning, Multi-Function Enhancements for OS/2®

DeskMan/2™

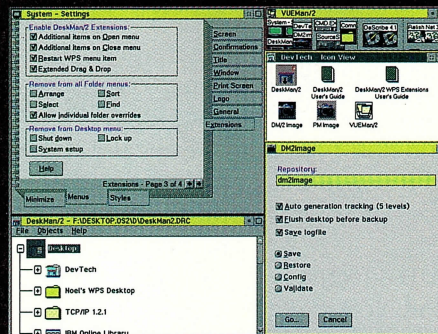
NEW
Version 1.51
with
 Warp support!

DeskMan/2™ Workplace Shell™ Manager Efficiently Manage Your Workplace Shell!

- Easy to use drag & drop interface
- Complete command line interface + REXX & CID support
- Manage standardized or personalized desktops, customizing access to features
- Selectively save and recreate objects; even transport them between desktops, computers & versions of OS/2
- Recover from or prevent accidental changes to your desktop
- Much more - total management of the Workplace Shell

VUEMan/2™ Virtual Desktop Manager Increase Your Productivity!

- Makes multitasking easy; use and organize many concurrent activities with an easy to use drag & drop, point & click user interface
- Switch effortlessly between as many as 81 "virtual desktops" - like having 81 monitors that fit right on your desk!
- Drag and drop objects from WPS to virtual desktops, and between virtual desktops
- "Layouts" record window position and size for automatic repositioning and resizing at any future time
- Password protection for windows



All this functionality & much more Four Great Solutions - One Low Price!

"DeskMan/2 dramatically improves the ability of corporations and users to get the most out of OS/2. DeskMan/2 helps administrators restrict and control what users are doing and provides robust backup/restore features and seamlessly enhances the features of the WPS."

Dr. Mike Kogan:

Lead Architect of OS/2 2.0
Author: The Design of OS/2



DM2Image™ Configuration Snapshot Facility Saves Your Working Environment!

- Save or restore an unlimited number of complete system configurations (including active or inactive WPS desktops)
- Terrific for disaster recovery; training & demo machines: other uses
- Extensible rules let you customize configuration definitions
- Configuration snapshots are compressed for maximum efficiency
- Protects WPS desktop, config.sys, startup.cmd, .INI files, autoexec.bat, WIN-OS/2 desktop & system config. data

DeskMan/2 Extensions Workplace Shell Extensions

Configure the Workplace Shell to Work Your Way!

- Modify and enhance the runtime behavior of the Workplace Shell
- Enjoy drag & drop without using special keys to shadow or copy
- Control, selectively or globally, all WPS defined object styles, menu items and capabilities - the ability to Arrange, Sort, Delete, Rename, Settings, Lockup, Shutdown, etc. (even object visibility!) is completely definable
- Corporate Edition available with password protection for objects, audit trailing for WPS activities, and other custom enhancements

Copyright 1994 Development Technologies, Inc. All rights reserved. DeskMan, DeskMan/2, VUEMan, VUEMan/2 and DM2Image are trademarks of Development Technologies, Inc. CompuServe is a registered trademark of CompuServe, Inc. Workplace Shell is a trademark of International Business Machines Corporation. IBM, OS/2 and TalkLink are registered trademarks of International Business Machines Corporation.

DevTech

Development Technologies, Inc.
Software Development & Technology Transfer
308 Springwood Road, Forest Acres, SC 29206-2113
Voice: (803) 790-9230 Fax: (803) 738-0218

Raiding OS/2

Sometimes five disks are better than one. **By Rick Cook**

Three years ago, almost no one had heard of RAID. Now, the storage technology is springing up like mushrooms after a spring rain—and OS/2 installations are leading the way.

RAID stands for Redundant Array Of Inexpensive (or Independent) Disks and it matches storage strategy to modern networking and client-server systems in an effective way. The combination of fault tolerance and low price makes it especially popular with OS/2 users in corporate and client-server environments.

Basically, RAID uses a lot of PC-type hard disks working together to provide the same capacity and fault tolerance you get with a much more expensive mainframe hard drive. It substitutes quantity and technology for the quality of the hard disk and gets more quality in the process. With 1-gigabyte (GB) PC-type hard drives dropping down into the \$500 range, and with more companies using operating systems like OS/2 to put mission-critical data on servers, RAID is getting more and more popular.

RAID isn't perfect. It doesn't mean you don't have to back up your data, for example, and it consumes performance and storage capacity, but for servers, it is a very strong option.

More importantly, perhaps, using RAID effectively means making intelligent choices. Before you make those choices, you have to understand some basics. For a detailed technical explanation of RAID technology, see the August 1994 issue of *LAN Magazine* ("Raid Hits Main Street," pp. 147-154).

The reasons for RAID

The main reason for going to RAID is fault tolerance, which means avoiding data loss and having it available when you need it. RAID lets you to choose among

RAID works by spreading information across several drives and by adding parity information so that data can be reconstructed even if a drive fails

several different degrees of fault tolerance.

"If you experience a hard drive failure how critical is it to get the system up and running?" asks Joel Hagberg, of Micropolis, a Chatsworth, Calif. maker of RAIDs. "In an environment where an interruption can actually stop business—for example, a bank using OS/2 for customer ATM transactions—you can't afford it." As more and more mission-critical applications migrate to LANs and OS/2, this degree of fault tolerance becomes increasingly important.

Bob Andrew, sales and marketing manager for Storage Solutions Inc. (SSI), a Stamford, Conn. maker of disk drives and arrays says, "Some customers looking at the probability of drives failing felt they could take the risk, because the cost of recovery isn't that great. They can go back to last night's backup tape. Others say 'If that happens I'm out of business.' RAIDs are frequently used in hospital administration systems, 911 dispatch systems, and e-mail for large corporations."

Basically, RAID works by spreading information across several drives and by adding parity information (on the higher levels) so that data can be reconstructed even if a drive fails. Not only can it reconstruct the data, RAID will stay up and running even with a failed drive. Work doesn't stop because of a drive failure and all the information remains accessible. Although most people go to RAID for fault tolerance, it also boosts disk performance in many applications by spreading information over several drives, which can be read simultaneously.

SCSI-based disk arrays allow you to do overlapped input/output transactions. A single 8GB drive is a single spindle and can only handle one I/O operation at a time. Everyone is waiting to access the drive. With a

disk array, you can have five spindles that can handle five times the number of transactions. According to one drive maker, about 10 percent of the users of RAID are not interested in fault tolerance, only in high performance.

RAID and OS/2

Although about 50 manufacturers are now offering RAIDs, a few of them have products that are certified and optimized for OS/2. In theory, you can use any SCSI-based RAID with any OS/2 system as long as the RAID controller works with the hardware. In practice, things can be more complicated.

For one thing, using a non-OS/2 certified RAID on an OS/2 server means you are taking responsibility for handling problems. If things don't work right, the RAID manufacturer can simply point out that the array wasn't certified with OS/2. RAID also must be tuned to get the best performance, which means adjusting block sizes on Level 5 and other parameters on all levels to work best with the particular operating system. For example, Micropolis' Hagberg suggests that 4GB seems to be a "magic number" for setting up certain volumes. Exceed it, and you're more likely to have trouble.

The third benefit is integration. RAIDs designed for use with OS/2 often come with management utilities and other software that works through the OS/2 GUI, which makes life easier on the users and system administrators.

Changing economics

You could get almost as much protection by simply mirroring all disk reads and writes. With mirroring, all data is duplicated on a separate disk as it is written. In fact, this strategy is used by RAID Level 0 (see the box on p. 40).

The drawback is the cost. You have to buy two megabytes of stor-

age for each megabyte you need. Disk mirroring is used, but other levels are probably more popular among organizations that have gone to RAIDs.

However, the availability of mirroring as an option has an important influence on the economics of RAID because it puts an effective upper limit on RAID prices. You can mirror three drives with three additional drives, where a RAID can provide fault tolerance with only five drives. If the price of the additional RAID components exceeds the cost of an additional drive, mirroring is attractive.

"To make RAID economical,

you have to use larger capacity drives," says Storage Solutions' Andrew, "It makes no sense to have a RAID on a server with less than 8GB of capacity. A year ago, that was 4GB." The reason is that the price of drives is dropping quickly, but RAID systems are still fairly pricey, making it more economical to mirror the drives in smaller capacities.

"What's happened is that the cost of 1GB drives has dropped so dramatically that the savings in buying three drives won't equal the cost of an array," Andrew explains. "Our array electronics cost \$5,000. So, if you can buy

The Levels Of Raid

There are six levels of RAID (zero through five). In general, the higher the level, the more protected the data is. The only common ones are Levels 0, 1, 3, and 5. All have different characteristics based on the way the store data.

- **Level 0** is the fastest and chanciest. By some measures, it isn't RAID at all, since it has no redundancy (the "R" in RAID). At Level 0, the data is simply "striped" across several disks with each succeeding block written to a different disk in rotation. This approach makes writes extremely fast, but if one disk fails, the data is lost.
- **Level 1** is almost as fast as Level 0, but it has the most redundancy. This level uses disk mirroring, where the data is written twice to two separate drives. Sometimes, the drives are divided between two disk controllers, so a controller failure can't shut the system down. Level 1 isn't quite as fast as striping, but it comes close. Not only is the data written at full disk speed, but reads can be even faster because the next block can be read off whichever disk brings the information under the heads first. Level 1 is also the most disk-intensive and hence the most expensive level of RAID (subject to the economics discussed in this article). To get 1GB of Level 1 storage you need 2GB of disk space.
- **Level 2** is rare because it has been superseded. Level 2 systems can sense when a disk has failed, but can't do anything to correct it. Since modern disk controllers can tell when a disk has failed without Level 2 RAID, it is obsolete.
- **Level 3** also stripes data across disks, but it provides for error correction. A Level 3, RAID has a separate drive called the "parity drive" that stores error-correction information for the other disks. In case of failure, that information can automatically reconstruct the data on the failed disk.
- **Level 4** is similar to Level 3, but organizes the data more efficiently. Level 3 stripes the incoming bitstream across the disks, essentially byte by byte. Level 4 organizes the data into blocks and then stripes the blocks, which means less file fragmentation and better handling of big files.
- **Level 5** takes the ideas of Level 4 one step further. Like Level 4, it organizes the data into blocks before striping it across the disk. Unlike Level 3 or 4, it also stripes the parity information across all the disks in the array instead of dedicating a separate drive to parity. This approach means that you can't lose all your parity information if one drive fails and, in the opinion of many people, makes Level 5 more robust.

three 1GB drives for \$3,000, you don't need them. However, 2GB drives are \$2,000 each, so you spend \$5,000 to save \$6,000. If you're using 4GB drives, the cost of saving one of the new 4GB drives is a lot more, and RAID is dramatically cost effective."

Hardware RAID, software RAID

Although RAID always requires at least two hard disks, it doesn't necessarily require you to buy a special array. Some companies implement RAID entirely via software on the drives and controllers already in the system. Others use hardware, notably a special RAID controller and often an external disk array.

Obviously, RAID in software is a lot cheaper. However, it also uses more of your system resources, especially CPU cycles and cache memory, to do jobs that are done by the RAID controller board in a hardware system. The tradeoff is more expensive storage versus processing power. (For a review of Pro Engineering's EZRAID software, see *OS/2 Magazine*, Sept. 1994, page 18.)

Among the hardware solutions are both internal and external arrays. The external arrays have their own cabinet, power supply (or supplies), and are connected to the server only by the SCSI link to the controller in the computer. External RAID's are more expensive than internal, but the array doesn't have to be swapped when the server is upgraded, or when shifting to a backup server.

Redundancy is also important. An external array will often have critical non-disk components duplicated for added reliability. A built-in uninterruptible power supply is optional on a lot of external RAID arrays. Typically, they provide enough power to shut everything down gracefully in case of a power failure. If your array

doesn't have an uninterruptible power supply, you may want to add a separate one.

Even the little things can make a difference when you're trying to guarantee reliability. For example, many external RAID's have dual power supplies, each of which can handle the full load. Likewise, many models have dual fans, so they won't overheat if one fan fails.

One of the most common RAID options is hot swapping, which lets you replace a defective disk on the fly without shutting the array down. Most manufacturers offer hot swapping, although with some it is an option. Some of them also offer a hot standby, which is a spare disk already up and running in the array ready to take over from a disk that fails. Typically, RAID's with hot spares will automatically start to rebuild the missing data on the spare drive if a drive fails.

Although RAID protects data, it doesn't necessarily recreate it automatically. On many RAID systems, the operator has to intervene to rebuild data on a failed drive and often to return the system to the protected mode.

A RAID with one drive down will lose data if a second drive fails, but that situation isn't usually a problem. First, most companies can swap in a replacement drive very quickly. Drives are cheap enough that many users keep a spare on the shelf. Others rely on replacement guarantees from companies like SSI, which will replace a failed drive in one of its arrays for free.

According to SSI's Andrew, "The number of drive failures is quite small and the chances of two drives failing is infinitesimally small. The chances of a second drive failing is less than the probability of being hit by a meteorite."

Matching your application

Choosing the right RAID means balancing cost, disk speed, and

capacity in a three-way tradeoff. The balance point is likely to be different for each application.

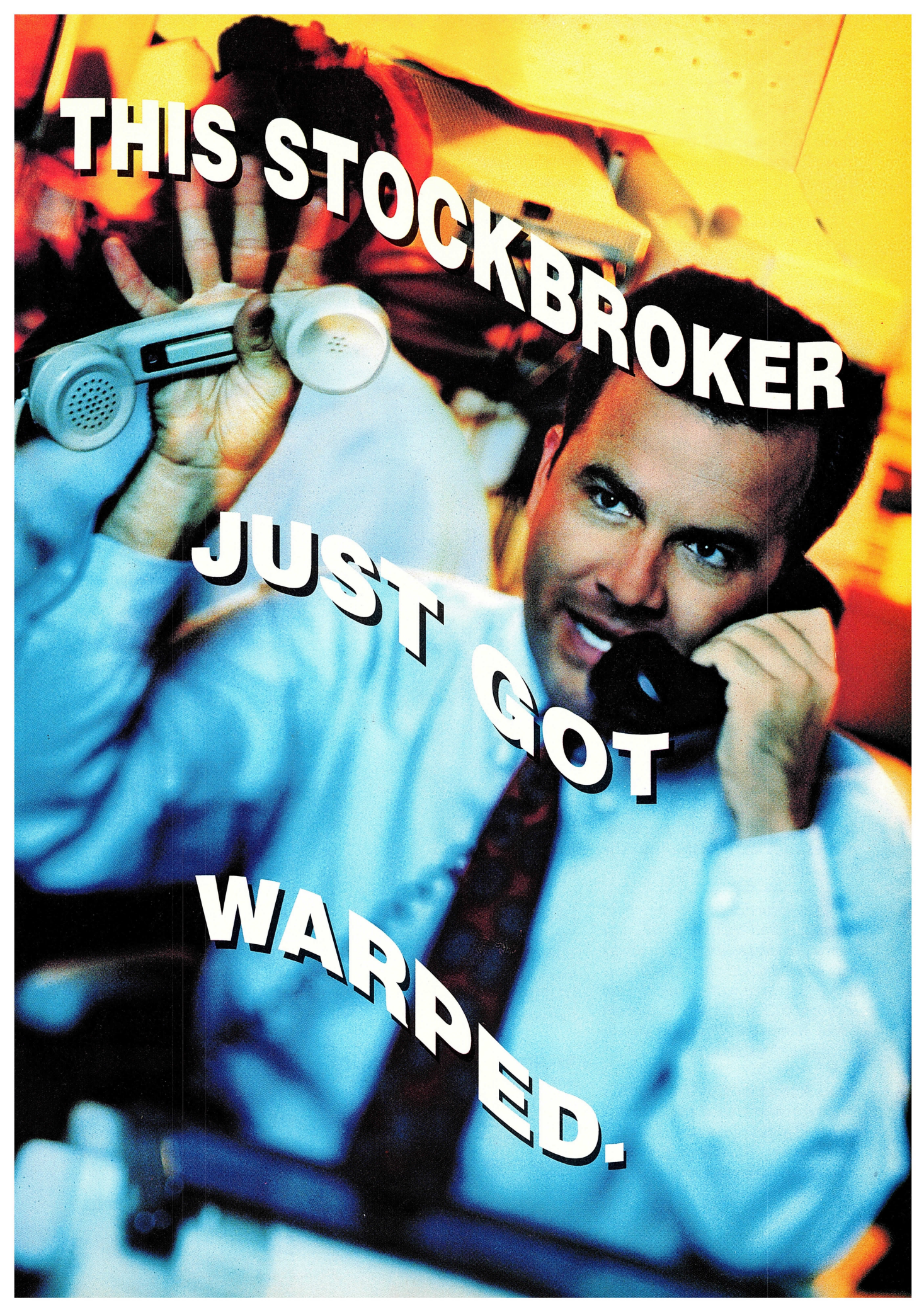
The first place to start is by picking the right RAID level. If you need maximum speed and don't need redundancy, then Level 0 (disk striping) is the obvious choice. If you need maximum redundancy, then Level 1 (mirroring) is the way to go. If you need a cost-effective solution that combines speed and security, your choice is a little more complicated.

You need to consider the kind of files you will be handling. It used to be that all RAID's were optimized for transaction processing. That is, they assumed the disks would handle a lot of fairly small files simultaneously. Level 3 in particular works best reading small files because the data is so highly fragmented across the disks.

However, it's no longer true that RAID is only for transaction-processing applications. Although most RAID's are still used for transaction-type applications, a growing number are storing fewer, much larger files. These are typically graphics files such as desktop publishing files or video clips. Each file may contain 20MB or more of data.

Obviously getting the best performance with a few big files takes a different storage strategy than a lot of little ones. Some RAID manufacturers now offer different RAID's, which are optimized for either transaction processing or large files.

Levels 4 or 5 usually work better than Level 3 for an application with a lot of large files, which is especially true if the block sizes are adjusted for maximum performance. Some RAID's allow this kind of tweaking and, in an imaging or graphics application, it can mean a hefty performance boost. As a practical matter, Level 5 is



THIS STOCKBROKER

JUST GOT

WARRPED.

much more popular than Level 4 in applications with all sizes of files because it is perceived as being somewhat safer.

RAID Level 5 extracts a penalty on every file write because the information is, in effect, read and written four times. For this reason, it is best to use Level 5 in applications where a lot of reads occur for every write. "A 10-to-one ratio is ideal," Andrew says. "Applications with read-write ratios below two-to-one probably should not use RAID."

In some other applications, RAID isn't the best choice. For example, single users are probably better served by single large drives.

The future?

While even RAID manufacturers don't claim that RAID is the whole future of disk storage, most observers feel it is going to be an important part. Currently, RAID is about the least expensive way to provide the kind of fault tolerance mission-critical applications require, at least for the large databases that are increasingly showing up on OS/2.

RAID may not be all things to all organizations, but it is getting an increasingly close look from companies that are moving into the OS/2 client-server future.

Rick Cook has been writing about computers and technology for more than a decade. His first real computer was an IBM 1620 with 16K of core RAM. He's been writing about what became OS/2 since 1986, and about UNIX somewhat longer. He can be reached at rcook@bix.com.

RAID RESOURCES FOR OS/2:

The following companies advertise support for OS/2 on their RAID products. Since players, capabilities, prices, and storage capacities are changing rapidly, this list cannot be complete and only provides a starting point.

Adjile Mirror CUDA RAID Tower Panther RAID

Adjile Systems
5816 Roseville Rd. #2
Sacramento, CA 95842
(916) 338-7660
READER SERVICE NO. 154

Clarion

Clarion Mass Storage Subsystems
4400 Computer Dr.
Westboro, MA 01580
(508) 336-9811 ????
READER SERVICE NO. 155

SmartArray XE

Legacy Systems
25 South St.
Hopkinton, MA 01748
(508) 435-6700
READER SERVICE NO. 156

MR/10 RAID

Mega Drive Systems
498 S. Robertson Blvd.
Beverly Hills, CA 90211
(310) 247-0006
READER SERVICE NO. 157

RAIDION series

Micropolis
21211 Nordhoff St.
Chatsworth, CA 91311
(818) 709-3300
READER SERVICE NO. 158

LANSer MRX

Sanyo Icon
18301 Von Karman Suite 750
Irvine, CA 92715
(714) 361-6888
READER SERVICE NO. 159

Seek Array

Seek Systems
11014 120th Ave. NE
Kirkland, WA 98033
(206) 822-7400
READER SERVICE NO. 160

RAIDcard

Storage Dimensions
1656 McCarthy Blvd.
Milpitas, CA 95035
(408) 954-0710
READER SERVICE NO. 161

RACarray

Storage Solutions
550 West Ave.
Stamford CT 06092
(203) 954-0035
READER SERVICE NO. 162

RAID SYSTEMS THAT SUPPORT OS/2

HP Disk Array (hardware)

Hewlett-Packard
3000 Hanover St.
Palo Alto, CA 94304
(800) 826-4111
READER SERVICE NO. 163

OASAS I (software)

Integra Technologies Inc.
17532 Von Karman
Irvine, CA 92714
(714) 756-9328
READER SERVICE NO. 164

RAID Bank Plus (hardware)

MicroNet Technology
80 Technology
Irvine, CA 92718
(714) 453-6100
READER SERVICE NO. 165

MAST VIII (hardware)

Pacific Micro Data
3002 Dow Ave. Bldg. 140
Tustin, CA 92680
(714) 838-8900
(800) 933-7575
READER SERVICE NO. 166

EZRAID (software)

Pro Engineering Inc.
1145 Hunt Club Rd.
Ottawa, ONT K1V 0Y3 CANADA
(613) 738-3864
READER SERVICE NO. 167



On a typical day,

stockbroker Bret

Williams makes

his personal

computer do some very atypical things.

He imports live market data off the ticker

at the same time that he's reading the stock

page on-line,

at the same

time that his

computer is firing off e-mail to a client,

and at the same time that it's faxing his lunch

order (pizza, usually).

He runs his PC without fear of crashing.

(If any one of his applications ever goes down,

everything else stays up.)

And he gets more out of the software he

knows and uses, like Windows™ and DOS.

Bret has OS/2 Warp, the operating

system that offers true multitasking,

Crash Protection™, Internet-access — not to

mention a BonusPak filled with

productivity applications.

The price is also less than you ever

thought

possible:

under \$90.

**HE'LL DO ANYTHING
TO AVOID A CRASH.**

Of course, you're welcome to do your own

risk assessment.

OS/2 Warp is available now. (For

stockbrokers and anyone else looking for

a great investment.) To get warped, stop

by your local software dealer, or call

1 800 3 IBM-OS2. Ask for a free demo disk.

The new 32-bit, multitasking, multimedia, Internet-accessed, crash-protected,
Windows-friendly, totally cool way to run your computer. **OS/2® WARP**

IBM

OS/2 Warp is available from your software dealer. It is also available from IBM for \$89 by calling 1 800 3 IBM-OS2.

Reseller prices may vary. OS/2 Warp consists of OS/2 Version 3 and BonusPak. IBM, Operating System/2 and OS/2 are registered trademarks of the International Business Machines Corporation. Crash Protection and the OS/2 logo are trademarks of IBM. Windows is a trademark of Microsoft Corporation. © 1994 IBM Corp.

Tape Backup Under OS/2

High end, low end and everything in between **BY LENNY BAILES**

The saving grace of backing up data under OS/2 is the intrinsic edge that the multitasking operating system provides. Under DOS, a system backup pre-empts all other tasks until the procedure is completed. Windows backup programs are supposed to run in the background, but they often hog CPU time, and cause your other applications to grind to a halt.

When it comes to convenient user features, OS/2 backup programs are only beginning to catch up with their DOS and Windows counterparts. They lag behind DOS programs in their range of hardware support, their ability to deliver statistical information, and the flexibility of their backup procedures. In the packages surveyed for this review, I found incomplete event logging and fewer data-compression options. OS/2 backup programs also have less reliable hardware and software error-correction algorithms. The tapes they produce are more likely to fail when you need to restore a critical piece of data. Backing up a hard disk under OS/2 takes about twice as much time as the same procedure under DOS. However, this lack of speed is balanced by your ability to continue using your word processor, spreadsheet, and telecommunications programs while the backup is in progress.

The OS/2 backup packages reviewed here vary in their degree of sophistication and in their targeted user base. Some of the products are designed for users of the more expensive SCSI and DAT devices found in corporate environments. Drivers for cheap, pop-

When it comes to user features, OS/2 backup programs are only beginning to catch up with their DOS and Windows counterparts.

ular tape drives (QIC 40/80 and parallel-port devices) are added to these packages almost as an afterthought. Some of the programs focus on the low-end, eschewing support for multi-unit SCSI and DAT drives.

Backup fundamentals

For basic backup support, all of the packages should be able to performing several common procedures. A good backup program will produce a complete archive of your hard-drive data and selectively track subsequent changes. All files under DOS and OS/2 include an "archive bit" that can be turned off after the file is copied, or left in the "raised flag" position.

A "full backup" duplicates all of your files to the backup media (floppy disk, tape cartridge, or another fixed disk) regardless of the setting on the archive bit. The Files "raised" archive bit on newly created files is lowered after a full backup, so that the files won't be copied on subsequent backup passes. (When you edit a file or modify its contents, the archive flag is automatically reset to the "unbacked-up" position.)

A "full backup copy" does the

same thing as a "full backup," except that the archive bits are not changed. All files retain their "pre-backup" archive status.

An "incremental backup" copies only those files with archive flags in the "raised" state to the backup media. The archive flag for each copied file is lowered.

A "differential backup" copies only files with archive flags in the "raised" state to the backup media. The archive flags for copied files are left unchanged.

Incremental backups are useful when you want to keep a set of backups containing only files that have been modified or worked on since the last full or incremental backup. This method is the most economical way of preserving all of your data without wasting storage space.

Differential backups are useful when you want to preserve a sequence of data files in the same backup set. Each time you restore the backup set, you may want to copy not only the latest version of a file, but a sequence of progressive versions since the last full backup.

The individual products we review here use different interface options and terminology to produce the same basic backup types. Some of the packages also have more sophisticated file selection features, allowing you to back up or restore files by global file extension, creation date, or other user-specified criteria. The flexibility of the program's features and ease-of-use of the interface are important evaluation criterion. Performance efficiency and the range of supported hardware devices may also be crucial factors to weigh when

you are making your purchasing decision.

BACKMASTER, V. 1.1

MSR Development's BackMaster is the simplest low-end backup utility in the bunch. It supports about 15 tape devices that run through your floppy controller card or parallel port. BackMaster includes generic support for QIC 40/80 devices, as well as specific drivers for the Colorado Jumbo and Conner 250. The Coretape 250, Summit 120/250, and Micro Solutions Backpack 250 are supported by BackMaster but not specifically supported by competing packages. BackMaster is easy to use, has excellent statistical and reporting capabilities, and can read and write backup media in a DOS-compatible format. You can restore the tapes it produces with DOS packages such as Norton and

Central Point Backup and read tapes produced by these packages under OS/2. BackMaster can't save archives to a floppy disk, or fixed-disk media. The package offers no specific network support, and won't support SCSI tape-drive systems. BackMaster can control only one backup unit at a time, and includes only limited unattended backup support.

BackMaster has a simple, straightforward interface consisting of five pull-down menus for backup, restore, verify, tape utilities, and program options. In addition to the standard backup types you can choose files for backup by clicking on specific drives/folders or by specified filenames. The package does not let you include or exclude files by read-only, hidden, and system attributes. The Restore menu includes the standard "overwrite only older versions of files on

the hard disk" and "prompt for user input" options. File verification and comparison to backup media can be performed automatically after a backup or as a separate process.

No real-time write verification occurs during the backup process, and no ECC error correction occurs during restore operations. (ECC error-correction is a useful feature built into some of the competing products. It makes them able to successfully reclaim data from bad spots on the backup media. All too often, on low-end tape systems, you can perform a backup, verify it as sound, and discover three months later that the tape media has decayed. Much to your chagrin, the backup program reports that it can't restore one or more critical files to the disk. ECC error-correction can mitigate this situation.)

BackMaster provides some useful features. The tree-based file-selection menu is easy to use, allowing you to sort directory and file listings alphabetically or by other standard criteria. Saved backup sets and procedures can be loaded from the command line or dragged and dropped into a window after the program is started. BackMaster provides the most useful, accessible tape statistics of any of the reviewed packages. It displays the used and free space on the storage media when it reads a tape, just like the better DOS and Windows utilities. BackMaster reads and writes DOS-compatible backups in the standard QIC 40/80 format used by many DOS and Windows-based products. (BackMaster is the only reviewed product that provides this feature. The rest of them don't read or write DOS-formatted tapes, forcing you to waste two to three hours reformatting the "pre-formatted" tape cartridges you buy in

A SCSI Alternative

If your backup requirements are a little more ambitious than a few megabytes and you aren't willing to wait for hours, PCX offers a number of hardware and software solutions. Their SCSI and parallel drives range in price, speed, and capacity—from their PortaTape 250, priced at \$995 with 250MB capacity, to the PortaTape 1000, which can handle up to 10GB, priced at \$4,395.

All of their drives come bundled with PCX's OS/2 BackupWiz software. Drive installation is a simple matter of connecting the supplied cables to your SCSI or parallel port. Device numbers can be changed easily with a touch of a button on the back of the unit (no DIP switches to flip) and you are just about ready to go.

The BackupWiz software does not currently have a single-button install, but is simple to get up and running none the less. Once installed, the software behaves admirably, although it is fairly DOS reminiscent. It includes all of the required features: backup of entire volumes or selected files and directories, include or exclude lower level subdirectories, verification, and batch processing. While it might not be as sexy as other interfaces, it gets the job done.

The real advantage to the PCX solution is speed. When testing the PortaTape 525, we got an average backup transfer rate of 11.5 MB per minute. Our 330MB backup took less than 30 minutes. Restoring from tape cruised along at about half that speed, but PCX has released a new version of the software that should speed tape restorations.

The only disadvantage we found was the noise. The tape unit whines and chugs as it progresses, but if large storage and speed are a concern, the sound of the drive is a small sacrifice.

Overall, we found the PCX PortaTape and BackupWiz combination to be a simple-to-use, fast, and reliable solution for the mid-sized backup user. Most users with 500MB or less of hard-disk files may find that the price and storage capacity of the PCX unit a little more than they need and, at the other end of the spectrum, even the capacity of the largest tape drive may not be enough for backing up a network, but for those in the mid range, it is a real champ —Guy Wright

the store.) BackMaster includes a character-based emergency recovery module to restore data from the OS/2 command line.

BackMaster's unattended backup scheduler is very basic, supporting only a single date/time entry. You'll need to change the setting manually each time you want to schedule a

new unattended backup. The package runs in the background, but is a little bit slower than some of the competing products.

FASTBACK+

Symantec's Fastback+ is a happy compromise between high-end and low-end features. Unlike the

high-end Novaback and Sytos Plus products, it does not treat QIC 40/80 tape drives as second-class citizens. Fastback+ supports both SCSI and QIC 40/80 tape drives, and also allows you to back up to floppies, fixed disks, and removable media. It includes three user interfaces and allows you to construct intricate specific backup procedures. The package does not support parallel-port tape-backup systems. Backup volumes are saved in a proprietary format, which can be read by Fastback for DOS or Windows, but not by other programs. Tapes preformatted for standard QIC 80 drives must be reformatted before Fastback+ will use them.

Fastback+ offers "express" and "full" pull-down menu interfaces, as well as an iconic point-and-shoot mode. The express interface provides simple, preconfigured backup choices: All Files, Files I Choose, Only Changed Files, and so on. The full menus allow you to construct your own backup procedures, toggle compression on and off, and schedule unattended backups. Fastback+ can schedule multiple backups of different types on a daily or weekly basis. Fastback's Choose Files view allows file selections to be made by pointing and clicking on individual drives, folders, or file names. You can also designate specific files or global extensions by typing in their command-line paths. Fastback+ has an additional series of selection filters that allow you to exclude or include files by specifying minimum and maximum size, file date, and file attributes (Read-Only, Hidden, and System). These options provide greater flexibility than the selection criteria offered in MSR's BackMaster.

Fastback+ also allows you to access the scheduler, rechoose the backup device, and fine tune per-



Statement of Ownership, Management and Circulation (Required by 39 U.S.C. 3685)

1A. Title of Publication OS/2 MAGAZINE		1B. PUBLICATION NO. 1 0 7 3 1 5 4 7		2. Date of Filing 10/31/94
3. Frequency of Issue MONTHLY		3A. No. of Issues Published Annually 12		3B. Annual Subscription Price \$39.95
4. Complete Mailing Address of Known Office of Publication (Street, City, County, State and ZIP+4 Code) (Not printers) 600 Harrison Street San Francisco, California 94107				
5. Complete Mailing Address of the Headquarters of General Business Offices of the Publisher (Not printers) Same as above				
6. Full Names and Complete Mailing Address of Publisher, Editor, and Managing Editor (This item MUST NOT be blank)				
Publisher (Name and Complete Mailing Address) Ted Bahr, 600 Harrison Street, San Francisco, CA 94107				
Editor (Name and Complete Mailing Address) Alan Zeichick, 600 Harrison Street, San Francisco, CA 94107				
Managing Editor (Name and Complete Mailing Address) George Walsh, 600 Harrison Street, San Francisco, CA 94107				
7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given. If the publication is published by a nonprofit organization, its name and address must be stated.) (Item must be completed.)				
Full Name Miller Freeman, Inc		Complete Mailing Address 600 Harrison Street San Francisco, California 94107		
a wholly owned subsidiary of United Newspapers, plc		Ludgate House, 245 Blackfriars Road London SE1 9UY ENGLAND		
8. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities (If there are none, so state)				
Full Name NONE		Complete Mailing Address NONE		
9. For Completion by Nonprofit Organizations Authorized to Mail at Special Rates (DMM Section 424.12 only) The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes (Check one)				
(1) ☐ Has Not Changed During Preceding 12 Months		(2) ☐ Has Changed During Preceding 12 Months (If changed, publisher must submit explanation of change with this statement.)		
10. Extent and Nature of Circulation (See instructions on reverse side)		Average No. Copies Each Issue During Preceding 12 Months		Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies (Net Press Run)		101,400		106,495
B. Paid and/or Requested Circulation		28,424		16,515
1. Sales through dealers and carriers, street vendors and counter sales				
2. Mail Subscription (Paid and/or requested)		28,110		42,545
C. Total Paid and/or Requested Circulation (Sum of 10B1 and 10B2)		56,534		59,060
D. Free Distribution by Mail, Carrier or Other Means Samples, Complimentary, and Other Free Copies		5,000		5,000
E. Total Distribution (Sum of C and D)		61,534		64,060
F. Copies Not Distributed		6,877		3,900
1. Office use, left over, unaccounted, spoiled after printing				
2. Return from News Agents		32,989		38,535
G. TOTAL (Sum of E, F1 and 2—should equal net press run shown in A)		101,400		106,495
11. I certify that the statements made by me above are correct and complete.		Signature and Title of Editor, Publisher, Business Manager, or Owner H Ted Bahr		

PS Form 3526, January 1991

(See instructions on reverse)

Review

formance from the Choose Files view. The Priorities dialog lets you control the amount of CPU time demanded when backup, compare, and restore operations run in the background. You can speed up your other applications, or allocate more processor priority to Fastback+ by juggling the number of DMA buffers and the floating priority bar. File inclusion and exclusion filters and overwrite and confirm options can be set independently for compare and restore operations, as well as for backups, providing a wide range of flexibility in the procedures you can construct. If you like, you can clear space on your hard disk by selecting full, incremental, or differential erase, which will back up files to specified media and automatically erase them from their source directories.

Fastback+ is an example of sophisticated OS/2 programming. You can reset and adjust its internal defaults from the OS/2 Settings Book, as well as from menus inside the program. It supports software and hardware file compression, with on-the-fly ECC error correction. In addition, Fastback+ can monitor and verify file-writes to fixed or floppy-disk media on-the-fly during backups, saving you the necessity of running an additional compare operation.

Although Fastback+ can be configured to select several different types of backup devices, it does not include specific support for multiple-unit backup devices. I also experienced a minor problem during installation that kept me from accessing some of its device templates. I had to repair and purge my OS/2 .ini files and reinstall sev-

eral times, until everything finally appeared properly in the Fastback+ folder. The package does include an emergency recovery procedure from floppy boot diskettes.

NOVABACK

NovaStor's NovaBack is a product in transition. According to Novastor, the current character-based backup program and tape utilities are due to be replaced shortly by a Presentation Manager interface that matches NovaBack's Windows package. The package supports more SCSI, QIC 80, DAT, and parallel-port devices than any of its competitors (over 200 different manufacturers and drive types are listed in the manual). Novaback also has built-in support for tape devices that contain "stacked" multiple units, and it allows you to build procedures that

The Hardware Solution in a Software Package

ANNOUNCING

EZRAID PRO

NEW
VERSION

This OS/2 software solution provides the same full powered RAID benefits found in hardware systems world wide.

BENEFITS

Increase System Performance: Distributing data across multiple drives allows simultaneous reads and writes.

Simplify Data Management: Combine all your disks into one logical drive of unlimited size.

Protect Your Data: Real-time backups ensure complete fault tolerance.

NEW FEATURES

Remote Notification

Disk Spanning

Performance Monitor

CID-enabled

Enhanced Performance

Error Logging



EZRAID PRO & EZRAID Lite - The Cost Effective Solution

CALL OR FAX PRO ENGINEERING, INC. (613) 738-3864 FAX (613) 738-3871

Reader Service No. 22

switch between several "cascaded" backup devices automatically. NovaBack does not support older, low-end QIC 40 devices or backups to floppy disk or fixed-disk media tape. The program uses a proprietary tape format that can also read backups produced by NovaBack for DOS and Windows. You have to reformat your store-bought tapes before any version of NovaBack can use them.

The older, character-based version of NovaBack is the fastest OS/2 backup software on the market. The package includes a few

sample procedures and allows you to build full, incremental, or differential backup sets. Besides include and exclude file-selection filters by date or by all four OS/2 file attributes, you can choose whether to back up and restore Novell network trustee rights for individual directories. NovaBack's tape information utilities are good, permitting you to view a cumulative total of the space required by the files you select for backup. The tape utilities can also check the contents of tapes formatted under NovaStor's proprietary format,

UNIX's AS400, VAX VMS, and Novell SIDF. NovaBack can't read and restore tapes written in these formats. However, you can generate a backup log from tape to the screen, printer, or a disk file. The common DOS QIC 80 format is not recognized.

Although the character-based NovaBack is faster than any of the other reviewed packages, it's a CPU-hog, making other applications behave more or less the way they do when you back up under Windows. Keyboard input in your word processor can be suspended

The Parallel Universe

In this world of IRQs, DMAs, and differentiating bus types, few products live up to the moniker "plug-and-play," but parallel tape backup devices do. The basic idea is that you have an external tape-backup unit that you plug into the parallel port of your computer, install the drivers, and go. This is the theory, but the proof of the pudding is in the eating, so I sampled three of these devices to see if their claims were true.

First, a quick word about parallel-port-based backup drives in general. The first thing is that these drives are often slower and more expensive than traditional backup devices that use SCSI or floppy controllers to connect to a PC. They're mainly intended for backing up laptops or multiple machines that only need an occasional backup.

Parallel QIC

The first drive, Iomega's Parallel Port II, seemed too good to be true. Not only was it nice and compact, but Iomega even included OS/2 backup software made especially for their drives. The down side was that the OS/2 software was \$79.95 extra and it didn't work.

The Iomega backup software turned out to be an Iomega-specific version of MSR's BackMaster 1.1, which was still in beta. I got a hold of the final version, BackMaster 1.1, which successfully backed up and restored my hard disk using the Iomega Parallel Port II. Iomega is updating their software to match the BackMaster software. You'll have the most success with a version later than 3.5.

As this review was going to print, MSR was also adding support for Colorado's Trakker drive, and Colorado was nice enough to lend us a Trakker 250. Colorado is working on their own OS/2 software, which they will make available under an arrangement similar to Iomega's (an extra charge for the OS/2 version).

Each of these two drives had their merits. While the Trakker seemed to be slightly faster than the Iomega, the Parallel Port II was definitely the smaller and lighter of the two. One complaint about the Trakker was that it didn't have an on/off switch, so the only way to turn it off was to unplug it or attach it to a power strip. But Colorado has just lowered the price of the Trakker, so it is now significantly cheaper than the Parallel Port II.

Currently, BackMaster is the only OS/2 backup software that offers support for parallel-port QIC tape-backup drives, but NovaStor has announced that the next release of Novaback, due out later this year, will support parallel-port QIC tape-backup drives as well.

Parallel Enterprise

While the parallel backup drives that used QIC tapes were mainly intended for backing up laptops, OS/2 solutions that are intended for backing up remote servers and the like are also available. Two of these offerings are complete solutions (software and hardware) from Parallel Storage Solutions and Analog & Digital Peripherals Inc. These drives are mainly high-end DAT and Standard quarter-inch tape drives that come with SCSI-to-parallel controllers embedded in the drive mechanisms for speed.

The model I looked at was Parallel Storage Solutions' PSS-1000. This device used Standard quarter-inch tapes, which are similar in size to VHS tapes and capable of storing up to 1.2 gigabytes, uncompressed. This device was about six times faster than the QIC drives tested here, and was able to write and verify in one pass. With compression, the tape is capable of storing up to 2.4 gigabytes.

PSS's software was Spartan and straight to the point. While the installation program created a folder containing the main program and sample scripts in the Workplace Shell, the program itself ran in a full-screen session with no mouse support. Once installed, the software worked flawlessly.

In General

Another consideration in these devices is what kind of parallel port you have. The traditional parallel port provides 8-bit output but only 4-bit input, which results in something of a bottleneck when performing verifications and restorations. The cheapest way to circumvent this problem is with a bi-directional parallel port, which is only a few dollars more than a conventional parallel port and offers 8-bit input and output. The more expensive way is to get either an Enhanced Parallel Port (EPP) or the older Extended Capabilities Port (ECP), but both of these need special driver support from the backup program to provide any enhancement. So, make sure your backup software supports these special ports before you invest in one of them—Alexander Antoniadis

for up to 30 seconds while the tape wheezes away in the background. The new, Presentation Manager version of NovaBack will be fully multithreading, thereby eliminating this problem.

NovaBack's strongest points are the power of its automated procedures and its performance speed. I found it to be a little touchy. With many applications open, under low-memory conditions, I occasionally experienced system crashes, but only when I constantly opened and closed folders and repeatedly switched NovaBack into the foreground while it was opening or closing the tape drive.

SYTOS PLUS

Sytron's Sytos Plus File Backup Manager is another product aimed at the high-end SCSI market. Support for a series of QIC 40/80 floppy-based drives has been added to the package only within the last several months. It still doesn't support Irwin or Mountain drives, although it provides drivers for OEMs of Mountain-manufactured hardware (such as Tandberg). The package includes support for a wide variety of SCSI and DAT devices. It also supports backups to floppy disk, removable or non-removable fixed-disk media, and network volumes. The package uses a proprietary tape format, which will necessitate re-initializing store-bought preformatted tape cartridges. Installation of the package, and adding drivers from supplementary disks is a painfully slow process but, once you've got it on your hard disk, it is straightforward and reliable (probably the most stable of any of the reviewed packages—never crashing, and smoothly allowing you to do other work while it runs in the background.)

Like NovaBack, Sytos Plus 1.38 (the current shipping version) has

plain-vanilla, text-based menus. The package is procedure-oriented, discouraging you from changing file-selection criteria on-the-fly. You need to open a new template and create a new procedure each time you want to back up, restore, or compare a new drive or set of directories. You can't easily load an established procedure and make small changes. The file-selection interface is extremely straightforward. You can perform a full backup, compare or restore operation, or select individual drives, directories, and filenames from a hierarchical menu.

Sytos Plus does not offer drag-and-drop or other frills, such as volume-size estimators and cumulative byte-total statistics. You can include or exclude files by file name, file extension, or file date to create a selective backup. The ability to select files within a specified date range, as well as before or after a given date, is a feature not found in the competing products. Sytos Plus does not allow you to include or exclude files by read-only, hidden, or system attributes, but it allows you to automatically raise or lower the archive flag. A compensating feature in lieu of selection by file attribute is to specify a list of files that should be redirected to another location during a restore operation. If you don't want to overwrite your *.ini* files, Desktop, or other directories, you can tell the program to restore the backed-up versions to alternate drives or directories.

Sytos Plus has a nice logging feature, delivering a complete status report after the completion of each operation. It also includes support for Novell and 3COM networks, sending messages to network users when a backup is in progress. The base package has an adequate unattended backup scheduler, and

Sytron also makes a series of complementary utilities that it markets separately. Sytos Scheduler is a full-featured graphical event scheduler. Like NovaBack, it will run OS/2 executable files and command scripts, as well as Sytos Plus tape procedures.

Sytos Plus does not include a bundled emergency recovery kit. If you need to restore the system from floppies, you need to purchase Sytos Rebound, another separate product. A third product, Sytos Repro, is used to perform portable backups of your OS/2 desktop that can duplicate a configuration on other workstations. Repro is similar to the Workplace Shell maintenance utilities we reviewed in the November issue of *OS/2 Magazine* ("Preserving Your Desktop," pp. 44-49), except that it stores data on tape, as well as on diskette or fixed-disk media. Sytron has a complicated copy-protection and licensing scheme for this utility that limits the number of times it can be used to restore a configuration to other workstations. If you're serious about duplicating system configurations in a multi-user environment, you might get better mileage from DeskMan/2 or MultiMaint, which were covered in the November review.

Lenny Bailes is a writer, teacher, and consultant in the San Francisco Bay Area. He can be reached via CompuServe at 70713,562.

RESOURCES:

Analog and Digital Peripherals

P.O. Box 499

Troy, OH 45373

(513) 339 2241

fax (513) 339-0070

READER SERVICE NO. 168

(continued on p. 50)

Colorado Trakker 250 (\$199)

Colorado Memory Systems
800 South Taft Ave.
Loveland, CO 80537
(303) 669-6500
(800) 845-7905
fax (303) 667-0997
READER SERVICE NO. 169

Iomega Tape 250 Parallel Port II (\$399)

(This drive was undergoing a name change at press time and the new name wasn't available)

Iomega Backup for OS/2 3.5 (\$99)

Iomega
1821 West Iomega Way
Roy, UT, 84067
(800) 777-6654
(801) 778-1000
fax (801) 778-3450
READER SERVICE NO. 170

Backmaster 1.1 (\$79.95)

(Upgrade free to registered users of previous version purchased after July 1, 1994, or \$9.95 before July 1)
MSR Development
P.O. Box 632070
Nacogdoches, TX 75963

(409) 564-1862
fax (409) 560-5868
READER SERVICE NO. 171

NovaBack 2.1 PM, version 1 (\$149)

(\$50 upgrade from previous version, \$99 to upgrade from a competing OS/2 product)
NovaStor Corp.
30961 Agoura Rd. #109
Westlake Village, CA 91361
(818) 707-9900
fax (818) 707-9902
READER SERVICE NO. 172

PSS-1000 (\$2,495)

Parallel Storage Solutions
116 South Central Ave.
Elmsford, NY 10523
(800) 998-7839
(914) 347-7044
fax (914) 347-4646
READER SERVICE NO. 173

BakupWiz 1.11 (\$149)

PortaTape 525 (\$1,295)

PCX
3525 Del Mar Heights Rd. Ste. 313

San Diego, CA 92130
(619) 259-9797
fax (619) 481-6474
READER SERVICE NO. 174

Fastback+ v. 1.0 (\$189)

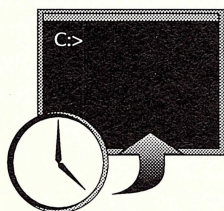
(1.1 upgrade available via BBS or CompuServe)
Symantec Inc.
10201 Torres Ave.
Cupertino, CA 95014
(800) 441-7234
(408) 253-9600
READER SERVICE NO. 175

Syτος Plus File Backup Manager v. 1.38 (\$295)

Syτος Premium 2.0 (\$199 until Dec. 1994, \$99 upgrade from previous version)

Sytron Corp.
134 Flanders Rd.
Westboro, MA 01581
(800) 877-0016
(508) 898-0100
fax (508) 898-2677
READER SERVICE NO. 176

Schedule Programs & Reminders Automatically...



Chron v4.0

Scheduler for OS/2

Only \$99

Site Licensing Available

Uses:

- Schedule backups and database maintenance
- Remind yourself of recurring meetings
- Schedule long-running or resource consumptive tasks for after hours



Hilbert Computing
1022 N. Cooper
Olathe, KS 66061

Voice: (913) 780-5051
BBS/Fax: (913) 829-2450
CIS: 73457,365



Reader Service No. 23

Fully Supports
OS/2 Warp!

The First Twain Enabled Image Scanning & Viewing Utilities for OS/2

APPLAUSE

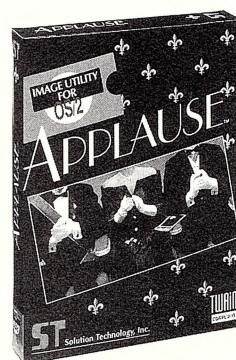
FEATURES:

- Fast Image viewing
- Easy Screen Capturing
- Quick File Conversion
- Efficient Color Modification
- Powerful Image Manipulation
- Real-Time Image Navigation

CURRENTLY

SUPPORTS:

- Logitech Scanman 256
- Hewlett Packard IIP
- Hewlett Packard IIC Series



After The **APPLAUSE** Comes

The **REVIEW**

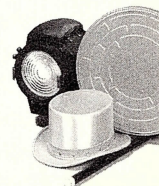
Document Management System

- Flexible & Fast Search/Retrieval
- Multiple search Fields
- Network Support and more...



Solution Technology, Inc. 1101 South Rogers Circle, Bldg 14 Boca Raton, FL 33486
Tel: (407) 241-3210 Fax: (407) 997-6518

Applause and Review are registered trademarks of Solution Technology, Inc. All other brand names are trademarks of their respective owners.
©1994 Solution Technology, Inc.



Reader Service No. 24

**Late-Breaking
Developments in the
World of OS/2**

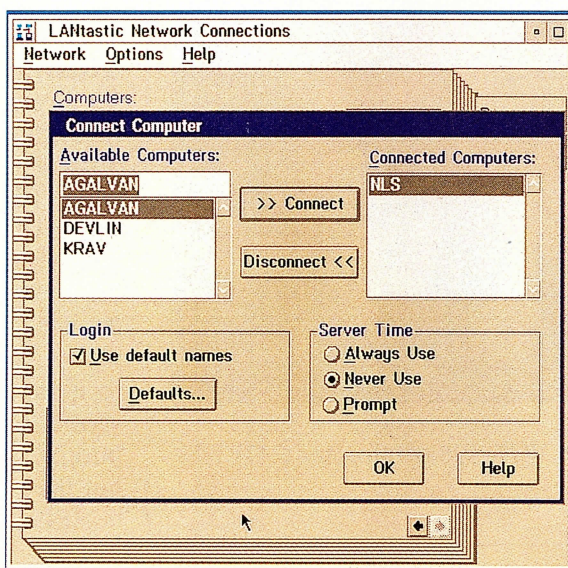
Just Announced

LANtastic for OS/2

Peer to peer to OS/2

Artisoft Inc. announced the first true 32-bit OS/2 peer-to-peer networking product, LANtastic for OS/2. This new version is compatible with DOS and Windows clients on existing LANtastic networks and SMB-based operating systems, such as LAN Server, Netware, or Windows NT Server. Security features of LANtastic for OS/2 include access-control lists (ACLs) that can limit access based on file location or time constraints and issue time-limited accounts. The modular server can change the amount of CPU resources with a slider control on the fly. Other features of interest include support for named pipes and use of OS/2 print queues. LANtastic for OS/2's prices range from \$139 for a one-user kit, to \$5,009 for a 100-user kit. Call Artisoft at (800) 233-5564, (602) 670-7100, or fax (602) 670-7101.

READER SERVICE NO. 177



family (CSet, CSet++, and CSet++ FirstStep) and are similar in design to Hockware's VisPro /REXX products. Programming can now be done via Workplace Shell drag-and-dropping with a collection of CUA '91-compliant objects and sample programs that are included in the package. The suggested retail price of VisPro/C and VisPro/C++ is \$399, with an introductory price of \$199 until November 30, 1994. Call HockWare at (919) 380-0616 or fax (919) 380-0757.

READER SERVICE NO. 179

Rumba for the Mainframe (OS/2) 3.0

Cha cha with your data

Wall Data announced the latest version of their host-connection tool, Rumba for Mainframe (OS/2) 3.0. Rumba allows users to transfer data between hosts and/or back and forth from host to PC without reformatting. Network protocols that are supported include IPX, 802.2 (DLC), TCP/IP (via TN3270), Coax, and support for Novell's SAA Gateway. Other user-enhancement features include short cuts, a Fast Path utility for easy setup, and point-and-click file transfers. API support includes EHLLAPI and DDE, and an optional graphics feature allows interaction with host graphics, such as GDDM and SAS. New to this release are Workplace Shell integration features, a graphical toolbar, and APPC Support. The license fee for Rumba for Mainframe is \$400. Call Wall Data at (800) 487-8622, (206) 314-3855, or fax (206) 314-4344.

READER SERVICE NO. 180

Stacker 4.0 for OS/2 & DOS

Shrink your OS/2 FAT

Stac Electronics announced the latest release of their disk-compression program, Stacker for OS/2. This new version uses the same compression technology that is available in their DOS product, which allows for up to 2.5:1 file compression. Performance has been increased from previous versions. The Stacker driver can now be cached by using OS/2's regular disk cache. In addition, a Workplace Shell version of the Stacker Toolbox is now included for tuning and monitoring stacked drives. Stacker

4.0 for OS/2 will sell for less than \$100. Upgrade pricing was not available at press time. For more information call Stac Electronics at (619) 794-4300 or (800) 522-7822, extension 3646, or fax (619) 431-5058

READER SERVICE NO. 178

VisPro/C and VisPro/C++ 1.0

Drag-and-drop C

HockWare announced their first C and C++ language products, VisPro/C and VisPro/C++. These programs are designed to work in conjunction with IBM's compiler

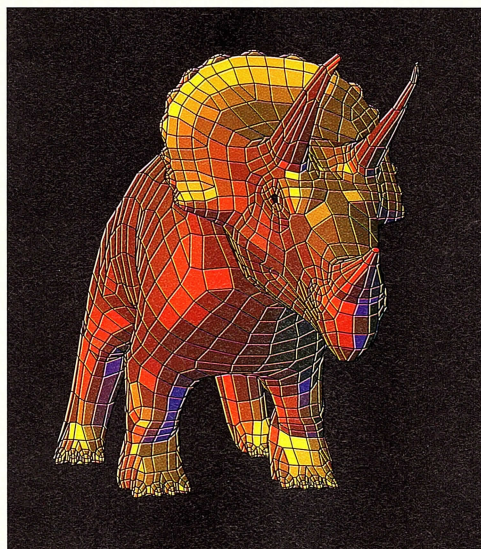
Just Announced

Mathematica 2.2 for OS/2

Do the math

Wolfram Research is releasing the first native OS/2 version of their interactive calculation tool, Mathematica. This application is used by scientists and financial analysts to solve complex mathematical problems. It features numerous symbolic, numeric, and graphical rendering functions. The OS/2 release will be capable of accessing almost one gigabyte of memory and runs in less memory than the Windows version does. Mathematica 2.2 for OS/2 is priced at \$995 with an academic version that is available for \$795. Call Wolfram Research at (800) 441-6284, (217) 398-0700, or fax (217) 398-0747.

READER SERVICE NO. 181



Fax Works Pro 2.0 Fax Works Pro LAN 2.0

Gimme the works

Global Village Communications, which purchased SoftNet, announced the release of Fax Works Pro 2.0 for OS/2. Fax Works Pro is an expanded version of Fax Works 2.0, which is now included in OS/2 Warp 3.0. The additional features of Fax Works Pro include optical character recognition (OCR) for incoming faxes and an improved printer-control language (PCL5) for better fax viewing and printing. In addition, the Pro version has better handling of phone books and a customizable tool bar. The upgrade to Fax Works Pro is \$49 for anyone who purchased OS/2 Warp 3.0. Without the upgrade, the new version is \$149. Call Global Village at

GET REAL!

Native, 32-Bit, OS/2 Word Processing with

DeScribe® 5.0

IMMEDIATE AVAILABILITY

WINNER...OS/2 Professional 1994 Best New Product Award

"DESCRIBE 5.0-LEADER OF THE PACK"

Geoffrey Hollander-Personal Systems Magazine 11/94

- \$299** DeScribe 5.0 SE - Subscription Edition includes upgrades and support through 12/31/95, plus DeLights CPU monitoring utility.
- \$159** DeScribe 5.0 CX - Standard Edition includes free installation support and access to Pay Support Services, plus DeLights CPU monitoring utility.



To order call:

DESCRIBE, INC.

1-916-646-1111 (Reseller Sales)

1-813-732-5500 (Enduser Sales)

CREDIT CARDS ONLY

Reader Service No. 25

* LAN, Enterprise, Windows® and NT versions available.

The secret's out!



- Native OS/2 spreadsheet •
- Easy • Fast • Powerful •
- REXX scripting • Objects to the core •

MESA™ 2
for OS/2®

**TO ORDER: CALL
1.800.315.MESA**

The spreadsheet that's more than the sum of its parts.

ATHENA DESIGN™
SPREADSHEET EXCELLENCE
17 St. Mary's Court
Boston, MA 02146
phone 1.617.734.6372
fax 1.617.734.1130

Limited Time
\$99.
Introductory
Offer

Reader Service No. 26

Just Announced

(800) 329-9675, (404) 984-8088, or
fax (404) 984-9956.

READER SERVICE NO. 182

Notrix

Manipulate your Notes

Percussion Software Inc. announced Notrix, a programming tool for manipulating large Lotus Notes databases and building Notes workflow applications. Notrix is designed to fill the "programming gap" between the Notes macro language and programming directly to the Notes API. It runs on OS/2-based Notes servers and works with OS/2, Windows, and Macintosh-based Notes clients. Notrix allows programmers to build applications with REXX by using extensions included with the product. REXX

programs are created within Notes and are stored as Notes documents. The Notrix Applications Developer Kit is for developers who want to develop on a Notes client and later test applications on the server. Both products require OS/2 2.1 or later and Notes 3.0 or later.

Notrix Composer 1.0 for EDA/SQL is a Notrix application that lets Notes users move data between enterprise databases and Notes without programming. Composer supports more than 50 databases, including Sybase, DB2, Oracle, and Rdb. Composer requires EDA/SQL Server 1.3 or later (EDA/SQL is a server from Information Builders Inc.).

Notrix sells for \$3,495, the Notrix Applications Developer Toolkit is \$995, and Notrix Composer is \$4,995. Contact Percussion at (617) 267-6700 or fax

(617) 266-2810.

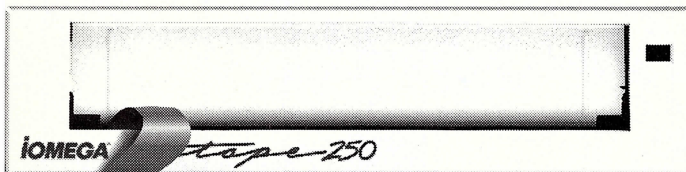
READER SERVICE NO. 183

Multimedia Object Pack for VX-REXX

Hear VX-REXX bark

DB Technologies announced the availability of a set of multimedia objects for VX-REXX. These objects include Circular Slider, Animated Graphic Push Button, MIDI, WAV, and digital video playback objects. The objects were written in C, are SOM-based, and appear on the VX-REXX toolbar. The package includes royalty-free distribution and several sample programs. It is priced at \$79.95. Call DB Technologies at (813) 378-3760 or fax (813) 378-3760.

READER SERVICE NO. 184



OS/2
WINDOWS
DOS

**WE'VE MADE IT
A POINT TO MAKE
SHARING DATA ACROSS
PLATFORMS EASY.**

Now there is a tape drive system that goes beyond just backing up your data. It also lets you share data across different platforms—be it OS/2, DOS or Windows. Thanks to ingenious software that reformats the data into the resident environment. And it does it all transparently. Plus, Iomega® tape drives come with the only 5-year warranty in the industry. So if you're looking for a tape drive, make it a point to check out Iomega. For a dealer near you, call **1-800-777-4236**.

IOMEGA®

©1994 Iomega Corporation. Iomega and the Iomega logo are registered trademarks and Tape250 is a trademark of Iomega Corporation. OS/2 and Windows are trademarks of their respective holders.



Staff photo by Einstein

Local resident reported "This OS is fast, really fast, and multitasks like nothing from this world! It blew away all my windows!"

INDELIBLE BLUE REPORTS SIGHTING OF OS/2® WARP!!



**"OS/2 WARP CONTAINS
ALIEN KILLER MICROBES!!"**

- Redmond, Washington

"OS/2 WARP CURES CANCER!!"

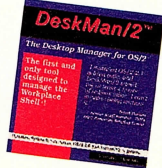
- Armonk, New York

Sometimes it's hard to tell truth from fiction. The professional "rumor-mongers" (those spreaders of fear, uncertainty and doubt), media hype, and the electronic grapevine often take on a life of their own. For those of us who have stuck with OS/2 since its days of relative obscurity, the sudden fame is a little bewildering. Sure, it's great that EVERYBODY is talking about OS/2 Warp, but how do you make sense of it all?

Indelible Blue separates fact from fiction. You'll always get the straight scoop from us. We're an independently-owned company started by people who believe that OS/2 is the best operating platform for the PC currently available. We want to help users find what they need - quickly and easily. Our customers tell us that we're a pretty friendly bunch, too.

Heard a good Warp rumor lately? (Someone must be *really* worried about the competition.) Send us a copy of the most outrageous misinformation you've seen and we'll send a free Warp T-shirt to the top ten. Look us up on the Internet for the complete list on our new Web server at indelible-blue.com. And watch out for those nasty alien microbes.

US \$49.00




DeskMan/2™

by Development Technologies, Inc.

DeskMan/2 v1.51 is unmatched in its ability to maximize the multitasking power and versatility of OS/2! Incorporating VUEMan/2 virtual desktop & window manager, DeskMan/2 WPS Extensions, DM2Image, and the new DevTech Installer, DeskMan/2 is essential. DeskMan/2 brings new meaning to "multitasking". Using VUEMan/2, create as many as 81 virtual desktops. Manage, secure and manipulate Workplace Shell Objects like never before! DeskMan/2 makes OS/2 easy, from the PC to the LAN! Supports Warp. Corporate licenses available.

DEV32 MSRP \$79.95 SAVE \$30.00



THE SINGLE SOURCE FOR OS/2® SOLUTIONS

ORDERS: 800-776-8284
3209 Gresham Lake Road, Suite 135, Raleigh, NC 27615

**Hundreds of OS/2 Solutions
Available NOW at
Indelible Blue, Inc.**

We carry more products for OS/2 than anyone else. Period. Call today for our new full-color catalog. IBM and third-party apps in stock now!

OS/2 AND IBM ARE REGISTERED TRADEMARKS OF IBM CORPORATION. ALL OTHER REGISTERED TRADEMARKS BELONG TO THEIR RESPECTIVE OWNERS.
THIS AD DESIGNED AT INDELIBLE BLUE USING VARIOUS GRAPHICS SOFTWARE ON A PC RUNNING FAST AND CRASH-FREE UNDER THE OS/2 WARP BETA.
Reader Service No. 28



REXX Data Queues

TRANSFERRING DATA ON THE REXX EXPRESS BY DICK GORAN

REXX has an external data-queue facility that can serve as an inter-process communication facility (which is a fancy term that means that two or more programs can communicate with each other). To simplify matters for this column, I'll refer to a REXX data queue merely as the queue. You can think of the queue as a virtual file. No restriction is imposed on the contents of the queue other than the fact that items are removed from the queue one line at a time.

Two types of queues exist. One queue, available only within an OS/2 session, is named **SESSION** and is allocated whenever a REXX program is started within the session. This local queue is created the first time data is placed on the queue. The second type of queue, known as a private or named queue (although all queues are named), can be referenced by any REXX program running in any session. This type of queue is private (any program referencing the queue must know its name). The name given to a queue is subject to the same rules as the formation of a variable name in REXX, and the actual name of the queue is the uppercase value of the chosen name. Only one queue, regardless of type, can be considered the active queue for a given session at any point in time.

The **SESSION** queue can be used without any special preparation by the programmer. Data can be placed on the queue in a variety of ways. The **PUSH** and **QUEUE** key-

Definition 1: RxQueue subcommand.

```
RXQUEUE /FIFO [queue_name]
RXQUEUE /LIFO [queue_name]
RXQUEUE /CLEAR [queue_name]
```

This subcommand causes the data that follows it on STDIN (normally the keyboard, but it can be the redirected output of a command) to be placed in the default REXX data queue, **SESSION**, or **queue_name**.

If the source of the data is the keyboard, the data must be terminated with an end-of-file character—<Ctrl-Z> ('1A'x).

The default queue name can be altered by use of the OS/2 environment variable **RXQUEUE**.

The combined **STDOUT** and **STDERR** output can be redirected or "piped" to the REXX data queue. For example:

```
DIR *.XYZ 2>&1 | RXQUEUE
```

Definition 2: RXQUEUE() built-in function.

```
RXQUEUE( CREATE, queue_name )
RXQUEUE( DELETE, queue_name )
RXQUEUE( GET )
RXQUEUE( SET, new_queue_name )
```

Create returns the name of the newly created REXX data queue, which can be **queue_name** or a system generated name if **queue_name** is omitted or a queue named **queue_name** already exists.

Delete returns the following after attempting to delete **queue_name**:

- 0 Que has been deleted.
- 5 Not a valid queue name.
- 9 Queue name does not exist.
- 10 Queue is busy; wait is active.
- 12 A memory failure occurred.
- 1000 Initialization error; check *os2.ini*.

Get returns the name of the queue currently in use.

Set returns the name of the queue currently in use and replaces the current queue with **new_queue_name**.

Listing 1: Use RxQueue as a pipe.

```

/* 9501LS01.CMD - RxQueue used as a filter */
'set | RxQueue /FIFO'                                /* issue SET command */      /* 0002 */
                                                    /* 0001 */

number = 0                                           /* use as line counter */    /* 0003 */
do while QUEUED() > 0                               /* test for lines in queue */ /* 0004 */
    parse pull set_data_line                       /* get line from queue */    /* 0005 */
    number = number + 1                             /* increment line number */  /* 0006 */
    say RIGHT( number, 2, '0' ) || ' ' || ,         /* 0007 */
    set_data_line                                   /* echo line number & data */ /* 0008 */
end                                                    /* 0009 */

say '0DOA'x || number || ' lines from SET command' /* 0010 */
exit                                                  /* 0011 */
                                                    /* 0012 */
                                                    /* 0013 */

```

word instructions cause data to be placed on the active queue at the front (FIFO) or the rear (LIFO) of the queue, respectively. In addition, output can be piped to the queue using the **RXQUEUE** subcommand shown in Definition 1.

The **RXQUEUE()** built-in function, shown in Definition 2, is separate and distinct from the **RXQUEUE** subcommand.

Data can be removed from the queue one line at a time with the **LINEIN()** built-in function using

the reserved name of 'QUEUE:'. Data can also be removed with the **PULL** keyword instruction. This **PULL** instruction is the same as the one used to read input from the standard input stream (*stdin*) that defaults to the keyboard. In actual-

Listing 2: Inter-process communication example.

```

/*-----*\
|
|          9501LS02.CMD (rxls03) - Synchronize detached DIR command
|
|-----*/
if RxFuncQuery( 'SysLoadFuncs' ) then                /* 0006 */
do                                                    /* 0007 */
    call RxFuncAdd 'SysLoadFuncs', 'REXXUTIL', 'SysLoadFuncs' /* 0008 */
    call SysLoadFuncs                                /* 0009 */
end                                                    /* 0010 */

/*-----*\
| Build list of drives (with colon) |                /* 0011 */
|-----*/                                           /* 0012 */
drive_list = SysDriveMap()                           /* 0013 */
                                                    /* 0014 */
                                                    /* 0015 */
                                                    /* 0016 */
/*-----*\
| Start detached DIR command for each drive |          /* 0017 */
|-----*/                                           /* 0018 */
do drive_number = 1 to WORDS( drive_list )           /* 0019 */
    drive_letter = LEFT( WORD( drive_list, drive_number ), 1 ) /* 0020 */
                                                    /* 0021 */
                                                    /* 0022 */
    /* create output file & queue names */             /* 0023 */
    output_file = 'DIR_' || drive_letter || '.LST'    /* 0024 */

```


Listing 2: Inter-process communication example. (cont'd)

```

queue_name = 'QUEUE_' || drive_letter                                /* 0025 */
                                                                    /* 0026 */
/* create & load REXX data queue */                                  /* 0027 */
call RXQUEUE 'DELETE', queue_name /* be sure queue didn't exist */ /* 0028 */
call RXQUEUE 'CREATE', queue_name /* create queue */                /* 0029 */
call RXQUEUE 'SET', queue_name /* set named queue active */         /* 0030 */
push DATE() TIME() /* put something in queue */                     /* 0031 */
                                                                    /* 0032 */
/* detach dir >file & rxqueue name /clear */                         /* 0033 */
external_command = '@( @DETACH DIR ' ||,                             /* 0034 */
                drive_letter || ': \*. * /S 1>' ||,                 /* 0035 */
                output_file ||,                                     /* 0036 */
                ' 2>&1 & RXQUEUE /clear ' ||,                       /* 0037 */
                queue_name ||,                                     /* 0038 */
                ') 1>nul 2>&1' ||,                                   /* 0039 */
                '' /* 0040 */
interpret "" || external_command || "" /* 0041 */
end /* 0042 */
                                                                    /* 0043 */
/*-----*\ /* 0044 */
| Process the DIR output for each drive as it completes | /* 0045 */
\*-----*/ /* 0046 */
drive_number = 0 /* used for wrap list */ /* 0047 */
do while drive_list <> '' /* 0048 */
    drive_number = drive_number + 1 /* 0049 */
    if drive_number > WORDS( drive_list ) then /* 0050 */
        do /* 0051 */
            drive_number = 1 /* wrap to beginning of list */ /* 0053 */
        end /* 0054 */
    drive_letter = LEFT( WORD( drive_list, drive_number ), 1 ) /* 0055 */
                                                                    /* 0056 */
/* see if DIR command complete - queue empty */ /* 0057 */
queue_name = 'QUEUE_' || drive_letter /* 0058 */
call RXQUEUE 'SET', queue_name /* make respective queue active */ /* 0059 */
if QUEUED() = 0 then /* 0060 */
    do /* 0061 */
        output_file = 'DIR_' || drive_letter || '.LST' /* 0062 */
        /* ... process DIR output in .LST file */ /* 0063 */
        call SysFileDelete output_file /* 0064 */
        drive_list_entry = drive_letter || ':' /* append colon */ /* 0065 */
        parse value drive_list with, /* 0066 */
            prefix (drive_list_entry) suffix /* 0067 */
        drive_list = STRIP( prefix || ' ' || suffix ) /* 0068 */
    end /* 0069 */
                                                                    /* 0070 */
if drive_number = WORDS( drive_list ) then /* 0071 */
    do /* 0072 */
        call SysSleep 2 /* quiesce this session */ /* 0073 */
    end /* 0074 */
end /* 0075 */
exit

```


ity, **PULL** always reads from the active queue and, if no data is present on the queue, it reverts to *stdin*.

Listing 1 contains a short program that lists all of the environment variables in the current session as they would appear if you issued **SET** from the command line. The difference is that each line is preceded by a two-digit sequence line. My apologies to any of you with more than 99 environment variables.

The **SET** command is passed to *cmd.exe* because it is an external command. The output from the **SET** command is sent to the session's currently active REXX data queue (0002).

The **QUEUED()** function is used to limit the **DO** loop so it will continue the iteration only while lines remain in the queue (0005).

The **PARSE** instruction with the **PULL** option, or the shorthand

PULL instruction, is used to extract data from the queue. The difference between **PARSE PULL** and **PULL** is that **PULL** also translates the queue data to upper case (0006).

Interprocess Communication

The REXX data queue provides a convenient mechanism to allow the synchronization of multiple programs. For example, if a tree list of all disk drives and directories of a system is needed within a REXX program, the main program could start a detached **DIR** command for each directory after creating a unique queue for the specified drive letter and placing some data in the queue. The detached **DIR** command could be followed by the **RXQUEUE** subcommand to clear the queue.

The main program would test for the absence of data in each queue to determine if each **DIR** command had completed. If the queue that was used to synchronize the two ses-

sions (as opposed to containing the output of the **DIR** command) was named **QUEUE_C** for drive *c:*, and so on, the program in Listing 2 could be used to start a detached task to write the contents of the directory command to a file and clear the queue for each drive letter.

The program shown in Listing 2 can be downloaded from CompuServe in Library 2 of the OS2AVEN forum as *rxls03.cmd* and is also available on the Internet for FTP from ftp.netcom.com:/pub/dgoran as *9501ls01.cmd*.

Dick Goran is the author of the REXX Reference Summary Handbook, an OS/2 Reference. He has been in the computer industry since 1961 and was in the IBM mainframe systems software development business until 1987. He can be reached at 71154, 2002 on CompuServe, HONE81(DEV4672) on IBMLink and receives Fido Netmail at 1:209/705.

SINGLE KEY-STROKE SCREEN PRINTING

UNRETouched SCREEN
IMAGE CAPTURED BY PRNTSCRN

SCREEN SAVER

SCREEN CAPTURE

.WPG .MET .BMP .PCX .TIF .GIF .PCT

- Quality Color or Black & White copies of color Desktop Images.
- Copy any portion of any image on the Desktop.
- Screen Saver prevents monitor burn-in.
- Date & Time Display for Time-Stamping images.
- LAN installable. Complete support for LAN attached printers.
- Economical! 4 Utilities for 1 Price! Entity licensing available.
- The most stable and reliable product available.
- Includes both OS/2 2.1/2.0 (32-bit) and OS/2 1.3 (16-bit) versions.

THE LEADER: **PrntScrn**TM Screen Image Utility for OS/2

MITNOR Software

Phone: (918) 357-1628

Fax: (918) 357-2869

Simple enough for an end-user yet powerful enough for a technician

CLEAR

PERFORMANCE PLUS

version 3

A Tuning and Utility Kit for OS/2 Warp & 2.1

Features New Simple Interface (GUI)

- Config optimizer packed on one screen
- Emergency book disk or partition
- Workplace shell desktop backup
- Graphic measure and report programs

New Utilities—same simple interface

- DOS/Win application optimizer
- Bitmap viewer simple drag & drop
- Swap Monitor audible warning
- Automate file backup & more

Tuning book revised for Warp

- New DOS tuning section

BONUS: Extra diskette filled with spectacular OS/2 bitmaps

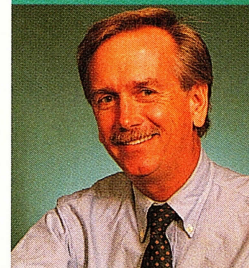
\$39.95

Simple

Clear & Simple, P.O. Box 130, West Simbury, CT 06092
(203) 658-1204 • FAX (203) 651-0354

Calendar of 1995 OS/2 Events

THERE'S NO BUSINESS LIKE SHOW BUSINESS BY DICK CONKLIN



While reduced travel budgets may have an impact on your conference and trade-show attendance, you can't ignore the value of going. Where else can you get leading-edge technical information from industry experts, see the latest in hardware and software

products first hand, and network with your peers—all at a bargain price? Attending a show or conference can be hard on your feet, but you'll come home with business cards in your pockets, shopping bags full of brochures, a couple of new software applications and books, and hopefully ideas on how

you can work smarter.

The question is, which shows should you attend this year—big generic shows or smaller focused shows? Some may be close to home while others may require travel. The OS/2 user and software developer will find trade shows devoted to OS/2 and an OS/2 pres-

Table 1: 1995 Shows and Conferences.

The following calendar of events is intended for preliminary planning. Check with the sponsor for confirmation of dates and locations and to get more information.

Software Development '95 West

2/13/95 - 2/17/95

San Francisco, Calif.

For Software developers (Windows, OS/2, and Macintosh). Tracks include software development, enterprise application development, managing software development, and globalizing software.

Exhibits: 500.

Attendance: 15,000.

Sponsored by Miller Freeman Inc. Call (800) 441-8826, (415) 905-2784, fax (415) 905-2222, or e-mail sd95west@mfi.com.

NetWorld+Interop

3/27/95 - 3/31/95

Las Vegas, Nev.

For networking and computing professionals working in the LAN, WAN, and telecommunications industries.

Conferences and tracks include internetworking, the Internet, media and transport, client/server platforms, network applications and services, network and systems management, and network.

Exhibits: 550.

Attendance: 75,000.

Sponsored by Ziff-Davis Exposition and Conference Company. Call (800) 488-2883, (415) 578-6900, or fax (415) 525-0194.

IBM OS/2 Technical Update

(held in conjunction with NetWorld+Interop)

3/27/95 - 3/31/95

Las Vegas, Nev.

Table 1: 1995 Shows and Conferences (cont'd).

For corporate developers, resellers, independent software vendors, and systems integrators.

Conferences and tracks include application development, C Set++ object programming, communications management, client/server solutions, database management, distributed systems management, ImagePlus, LAN system solutions, multimedia and Pen computing, object-oriented technology, OS/2, PC DOS, and technical support.

Exhibits: OS/2 pavillion planned.

Sponsored by IBM's Personal Software Products division. Call (800) 636-6634, (415) 578-6900, or fax (415) 525-0199.

Comdex/Spring

4/24/95 - 4/27/95

Atlanta, Ga.

For resellers, corporate decision makers, software developers, hardware distributors, marketing representatives, OEMs and computer manufacturers, consultants, and VARs. Held in conjunction with Windows World.

Conferences and tracks include multimedia, network computing, AppNet, office systems, OEM sources, corporate solutions, connectivity, new media, distribution and sourcing, developers, and international "hot spots."

Exhibits: 4,538.

Attendance: 100,000.

Sponsored by the Interface Group. Call (617) 449-6600 or fax (617) 449-6617.

OS/2 Development '95

5/8/95 - 5/10/95

Amsterdam, Netherlands

For European OS/2 software developers.

Conferences and tracks include SOM, Workplace Shell, user interface, OpenDoc, object-oriented REXX and Smalltalk programming.

Attendance: 450.

Sponsored by Miller Freeman Inc. Call (32) 2-538-60-40 (Belgium), fax (32) 2-537-56-26, or e-mail hmeintzer@mfi.com.

PC Expo

6/20/95 - 6/22/95

New York City, N.Y.

For PC users, developers, resellers, corporate buyers, VARs, and distributors.

Conferences and tracks include client/server, networking and communications, multimedia, portable computers, Windows, financial software, and management software.

Exhibits: 800.

Attendance: 120,000.

Sponsored by The Blenheim Group. Call (800) 829-3976, (201) 346-1400, or fax (201) 346-1602.

OS/2 World Conference & Exhibition

7/18/95 - 7/21/95

Boston, Mass.

For OS/2 users.

Conferences and tracks include networking, client/server computing, OS/2 power computing, systems administration, corporate software development, database design and implementation, and multimedia.

Exhibits: 75.

Attendance: 1,950.

Sponsored by Miller Freeman Inc. Call (415) 905-2363, fax (415) 905-2220, or e-mail os2world@mfi.com.

Software Development '95 East

8/14/95 - 8/18/95

Boston, Mass.

For Windows, OS/2, and Macintosh software developers.

Conferences include software development, enterprise application development, managing software development, and globalizing software.

Exhibits: 200.

Attendance: 5,000.

Sponsored by Miller Freeman Inc. Call (800) 441-8826, (415) 905-2784, fax (415) 905-2222, or e-mail sd95east@mfi.com.

NetWorld+Interop

9/25/95 - 9/29/95

Atlanta, Ga.

For networking and computing professionals working in the LAN, WAN, and telecommunications industries focusing on multivendor internet-working and interoperability.

Table 1: 1995 Shows and Conferences (cont'd).

Conferences and tracks include internetworking, the Internet, media and transport, client/server platforms, network applications and services, network and systems management, and network.

Exhibits: 600.

Attendance: 65,000.

Sponsored by Ziff-Davis Exposition and Conference Company. Call (800) 488-2883, (415) 578-6900, or fax (415) 525-0194.

IBM OS/2 Technical Update

(held in conjunction with NetWorld+Interop)

9/25/95 - 9/29/95

Atlanta, Ga.

For corporate developers, resellers, independent software vendors, and systems integrators.

Conferences and tracks include application development, C Set++ object programming, communications management, client/server solutions, database management, distributed systems management, ImagePlus, LAN System solutions, multimedia and Pen Computing, object-oriented technology, OS/2, PC DOS, and technical support.

Exhibits: OS/2 pavillion planned.

Sponsored by IBM's Personal Software Products division. Call (800) 636-6634, (415) 578-6900, or fax (415) 525-0199.

PC Expo

10/3/95 - 10/5/95

Chicago, Ill.

For PC users, developers, resellers, volume buyers, distributors, and system integrators.

Conferences and tracks include client/server, networking and communications, technical management, emerging technologies, business management, and Windows (OS/2 versus NT).

Exhibits: 300.

Attendance: 35,000.

Sponsored by The Blenheim Group. Call (800) 829-3976, (201) 346-1400, or fax (201) 346-1602.

ColoradOS/2

10/29/95 - 11/3/95

Colorado Springs, Colo.

A technical conference for OS/2 software engineers, consultants, developers, technical managers, educators, and hobbyist programmers who design or write OS/2 applications.

Technical sessions range from introductory to highly advanced. Attendees should be comfortable with C, C++, Smalltalk, Pascal, PL/I, or assembly language.

Attendance: 600.

Sponsored by Kovsky Conference Productions. Call (800) 481-3389, (719) 481-3389, fax (719) 481-8069, or e-mail cis:76711.1221@compuserve.com

Comdex/Fall

11/13/95 - 11/17/95

Las Vegas, Nev.

For resellers, corporate decision makers, software developers, hardware distributors, marketing representatives, OEMs, computer manufacturers, consultants, VARs, and others.

Conferences and tracks include multimedia, network computing, AppNet, office systems, OEM sources, corporate solutions, connectivity, new media, distribution and sourcing, developers, and international "hot spots."

Exhibits: 12,800.

Attendance: 180,000

Sponsored by The Interface Group. Call (617) 449-6600 or fax (617) 449-6617.

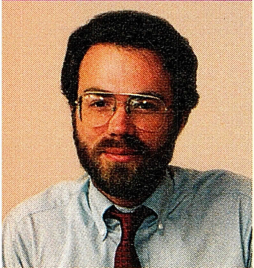
ence at most of the big events. IBM can be expected to have a big exhibit showcasing OS/2 and the latest in both IBM and vendor applications. While walking around the exhibit area, you'll find other exhibits promoting OS/2 software, hardware, and books. Check out the keynote speakers, seminars,

and tutorials for a variety of OS/2 topics.

We've listed some shows and conferences at which the OS/2 user can find plenty of reasons to justify attendance. Keep in mind that our calendar was prepared when many shows were in their early planning stages. Conference tech-

nical topics, the number of exhibits, and projected attendance are based on 1994 records.

Dick Conklin is a contributing editor to OS/2 Magazine and author of three OS/2 books. He can be reached at CompuServe 76711,1005 or Internet os2mag@vnet.ibm.com.



Dueling With Dual Boot

CONVERTING AN EXISTING OS/2 SYSTEM TO DUAL BOOT BY MARK MINASI

I started at a client site. It seemed that several machines had been preloaded with OS/2. Or maybe they just installed OS/2 on a blank hard disk. In any case, I needed to get to DOS, so I opened a command line and typed **boot /dos** and pressed <Enter>. I got the reply: "The dual boot feature has not been installed." Argh. That's when the client looked over and said, "Oh, yeah, that was something else we wanted to talk to you about. Can you get these things to boot DOS also?" Argh again.

Despite OS/2's reputation as a "better DOS than DOS," sometimes even the most die-hard OS/2 fan must boot under DOS. I can just imagine the e-mail I'll get from the true believers for suggesting that DOS still has some value, but it does. Until I can convince Origin Systems to rewrite their excellent games with a DPMI DOS extender instead of a VCPI DOS extender, DOS will have to suffice for Wing Commander. I don't think Steve Gibson will ever be able to implement SpinRite for OS/2, so the operating system world's *Ancient of Days* will have a place on my computer for a good long time.

You can always get back to DOS the obvious way—just boot from a DOS-formatted system floppy. That, however, would be an inelegant answer, which is why IBM provided two different approaches to dual booting. The first approach

is the Boot Manager, a neat little utility that I like a lot. It allows you to stuff as much as three totally inimical operating systems into the same computer and choose which one you want to boot from. This feature is neat because you can take two operating systems that are pure poison to one another (like OS/2 and Windows 95) and put them on two different partitions. They are totally unaware of one another and don't zap each other's FATs, directories, or extended attributes.

Boot Manager is, however, a trifle difficult to set up. It's not rocket science by any means, but it's also not very intuitive. The Boot Manager under OS/2 Warp (at least its second beta) is no better. In contrast, OS/2 installs the second option, dual boot, completely automatically. If you install OS/2 on a computer that already contains bootable DOS on its *c:* drive, OS/2 will make the system dual bootable. All you have to do is open a command line and type **boot /dos**. The PC will reboot under DOS and continue to boot DOS until you tell it to boot OS/2 (which you can do by changing your default directory to the OS/2 directory—**cd \os2** for most of us—and typing **boot /os2**).

Boot Manager works well for the machines that I run beta operating systems on. For my workaday machines, however, I prefer the dual-boot system because of my working modes. I tend to work with

OS/2 for a few days, then switch to DOS/Windows. Being able to go to OS/2 boot mode and stay there for a while is a nice option. In contrast, the Boot Manager requires that I reconfigure it every few days or I have to babysit the system while it boots to make sure the correct operating system is selected.

How does the dual-boot system work? To better understand it, let's take a look at how PCs boot. When you turn a PC on, the software in its BIOS (which is the software that clears the screen) takes control first, counts the RAM in the system, and announces all the copyright information. Once the BIOS has completed its initial housekeeping, it searches for a disk in the *a:* drive. If it finds a disk there, it tries to boot from the *a:* drive. If there's no disk in *a:*, it boots from *c:*. In both cases, booting means that the BIOS directs the disk drive to load the contents of the first sector on the disk into location 0000:7C00 in the PC's memory. A sector is the minimum unit of disk storage, which is usually 512 bytes in length. Technically, that sector is said to be the first sector on the first head of the first cylinder of the disk. Cylinders and heads are numbered from zero, and sectors are numbered from one, so the address of the first disk sector is (0,0,1)—cylinder 0, head 0, sector 1.

That first sector can contain anything, as long as it's useful PC code. But, in the PC world, an informal

convention exists that says that the first sector of a hard disk should be divided up into two parts—boot code and the partition table. The boot code is the program that continues the boot process. The partition table is a small table that describes how the disk is partitioned and allows a disk to be split into as many as four partitions. The first sector of a disk, by the way, is called the Master Boot Record (MBR).

One of the four partitions is marked "active." The boot code finds the active partition, loads that partition's first sector into memory, and passes control to what was loaded from the first sector. In other words, the partition marked Active is the one you want to boot from. The next program that assists in booting is located in the first sector of that active partition. That sector gets loaded in memory (it actually overwrites the Master Boot Record) and the computer starts executing its instructions. Those instructions then complete the booting process. That first sector of the active partition is called the DOS Boot Record (DBR) if you're running DOS. Logically, a similar first sector of an OS/2 partition could be called the OS/2 Boot Record (OBR). (Although I've never seen it written that way, let's use that terminology for this article).

The problem with dual booting is that when booting DOS, the first sector of the active partition should be the DBR, which will load the DOS system files. In contrast, when booting OS/2, the first sector of the partition should be the OBR, which will load the OS/2 system files. Switching around the DBR and the OBR is the main job of the **boot** command.

The **boot** command must also switch the *config.sys* and *autoexec.bat* files because OS/2 and DOS use different versions of those files. **Boot** uses the *c:\os2\system* direc-

tory to complete that action. Once you have this information, it's easy to understand how **boot** works.

Boot keeps two files in *c:\os2\system*—a file named *boot.dos*, which is the DBR, and a file called *boot.os2*, which is the OBR. At any given moment, it keeps one of them hidden in the *c:\os2\system* directory, but both files are, in fact, there. For **boot** to work, you've got to have both files. Because they only contain a single sector, they will be exactly 512 bytes long. When you're using DOS, the *OS/2 config.sys* and *autoexec.bat* files are stored in *c:\os2\system*, temporarily renamed *config.os2* and *autoexec.os2*. When you're using OS/2, the *DOS config.sys* and *autoexec.bat* files are stored in *c:\os2\system*, which is temporarily renamed *config.dos* and *autoexec.dos*.

All you need to do to make **boot** work properly is create *boot.os2* and *boot.dos* files and put them in *c:\os2\system*, copy the *OS/2 config.sys* and *autoexec.bat* files to *c:\os2\system*, rename them to *config.os2* and *autoexec.os2*, and make your system boot DOS. Just type **boot /os2** and you're in business. I'll explain exactly how to do that.

Getting ready

Assuming your system currently boots OS/2 only, you will need a DOS-bootable floppy that contains the *sys.com* program and the DOS version of the *debug.com* or *debug.exe* program. Your *c:* drive must be formatted as FAT—not HPFS.

Step one

Create and store the OBR using the **DEBUG** program. Open a DOS window and type **debug c:\os2\system\boot.os2** and press <Enter>. That action starts the **DEBUG** program. You'll see a minus sign on the screen—that's the **DEBUG** prompt. You'll also see "file not found"—that's normal. Load the OBR by typing **L 100 2 0 1** and

pressing <Enter>. You'll get no response except the minus sign again. Type **r cx** and press <Enter>. You'll then see "CX 0000," and a ":" prompt. Type **200** and press <Enter>. Back at the minus sign, type **w** and press <Enter> and you'll see the message "Writing 00200 bytes" and you'll return to the minus sign. Type **q** and hit <Enter>. You are now out of **DEBUG**.

Step two

Move *config.sys* and *autoexec.bat* to *c:\os2\system*, renaming them *config.os2* and *autoexec.os2*.

Step three

Reboot from the DOS-formatted floppy. When you get the DOS prompt, type **sys c:** and press <Enter>. Your *c:* drive will now be DOS-bootable.

Step four

Create an *autoexec.bat* and *config.sys* for DOS. They should be, as always, in the root directory.

Step five

Create the DBR, again using **DEBUG**. This time, start up **DEBUG** with **debug c:\os2\system\boot.dos** and do exactly the same things that you did in Step one.

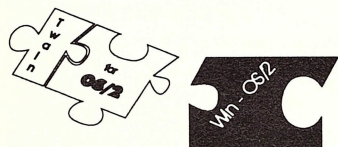
Step six

You're now ready to re-enable OS/2. Just type **cd \os2** press <Enter> and type **boot /os2**. Remove the floppy disk from drive *a:*, press <Enter>, and your system will reboot with DOS.

Note: OS/2 Warp 3.0 makes this a lot easier (see "Tips and Tricks," pp. 67-70).

Mark Minasi has been a consultant and educator in the fields of advanced PC operating platforms and PC technology since 1984. He is a contributing editor for *Compute*, *BYTE*, and *OS/2 Magazine*. You can contact him at *CompuServe 71571,264* or Internet *mminasi@access.digex.net*.

A Perfect Fit Win-OS/2 Support with the Twain for OS/2 DDK



For more information

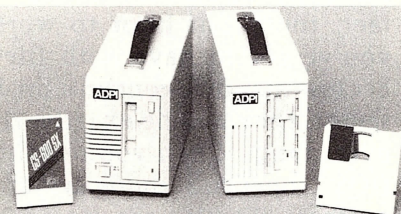
or

to order your developers kit call:

ST Solution Technology, Inc.
(407) 241-3210 fax (407) 997-6518

Reader Service No. 39

Multiple OS/2 Backup Solutions... Rewritable Optical, Tape, or Both!



Our Software lets you Backup OS/2 HPFS, FAT, and Hidden Files.
"Plug & Play" with Parallel and SCSI Port connections.
We also Support DOS, Mac, Novell, Peer to Peer, and SCO-UNIX.

TAPE BACKUP STORAGE

- 600 Meg and 2, 4, 8, and 10 Gig Capacity
- Tapes format "On the Fly"
- One standard hard drive backup solution for every computer in your office!

REWITABLE OPTICAL STORAGE

- 230 Meg and 1.3 Gig Rewritable Optical Disks
- Seek Time 28msec
- Ideal for active memory, mass storage/retrieval, archiving, backup, portable computing, etc!

Analog & Digital Peripherals Inc.
P.O. Box 499 • Troy, Ohio 45373
513-339-2241 • FAX 513-339-0070

Call 1-800-758-1041



Reader Service No. 38

PUT OS/2 TO WORK IN THE SALES DEPARTMENT

Make OS/2 Work Around the Clock with the industry's first combination voice/fax server.

Boost Sales. Improve Customer Service. Expand Current LAN Applications. All at manageable cost without adding staff.

SALES CENTRAL'S OS/2-Based 24-Hour, Voice/Fax Solutions Work for You... every hour of the day.

Dealer Locator. Fax On Demand. Info Desk.

And seven other ready-to-use applications.

Turn your OS/2 network into a true sales machine.

CALL: 1-800-567-1188



©1994 SALES CENTRAL CORPORATION. All rights reserved. All other products are either trademark registered trademarks of their respective holders. All rights reserved. Phone: 1-800-567-1188. Fax: 214-392.

Reader Service No. 37

America's OS/2 Store

- We stock a complete line of OS/2, Windows and DOS applications
- High-end computer systems
- Supported by IBM and Team OS/2
- Same day shipping
- 8 years of quality service
- All major credit cards accepted

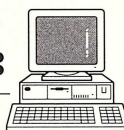
OFFICE SOLUTIONS

404 Termino Avenue
Long Beach, CA 90814
Orders: 310-439-5567
Fax: 310-438-7888
National: 800-897-APPS



Reader Service No. 40

Introducing... OS/2 Products from One Resource:



MFG'S REP Co.
Call 800 808-4-OS/2

**Word Processing
Spreadsheets Utilities
Graphics Networking
Development**

Full Service Sales.

We carefully evaluate the software we sell. You get the benefits of our trials!

Mfg's Rep Co. • P.O. Box 7626
Burlingame CA • 94011-7626
Fax (415) 525-2707
Tel (415) 525-2700 or
(800) 808-4-OS/2 [4672]

Reader Service No. 41

REMOTE-OS Multiuser for OS/2

Reap the benefits of a seamless enterprise with REMOTE-OS' multiuser OS/2 Solution.

Under REMOTE-OS, your existing LANs, DOS, OS/2 or Windows workstations, MACs and various ASCII or 3270 terminals can access the OS/2 local or remote servers to run OS/2 or DOS applications. Since each terminal can multitask up to eight sessions, they can also pass through to Mainframes, Midrange and Minis concurrently.

Cut you integration or small business problems down to size...CALL 407-994-4466 and get your enterprise together!

The Software Lifeline, Inc.
Executive Court One
2295 Corporate Blvd.
Boca Raton FL 33431
Fax 407-994-6304 • Voice 407-994-4466

Reader Service No. 42

Advertising Index

Reader Service No.	Company	Page	Reader Service No.	Company	Page
37	ADPI	64	40	Office Solutions	64
11	Apex Data	20	14	On Demand Software Services	29
5	Artisoft Inc.	13	13	OS+ Resource	27
26	Athena Design Inc.	52	1	OS/2 Vendor Council	2
9	BT & T	16	45	OS/2 World Conference & Exhibition	1
7	Cheyenne Software Inc.	14	10	PCX	19
30	Clear & Simple	58	22	Pro Engineering	47
31	Computer Data Strategies	65		Product Marketing Handbook	66
2	Contemporary Cybernetics	5	43	Proportional Software Corp.	65
5	Corporate Software	10	38	Sales Central Corp.	64
15	Creative Systems Programming	31	32	Softbridge Inc.	69
25	Describe Inc.	52	12	Softmart	23
19	Development Technologies Inc.	37	36	SofTouch Systems Inc.	C4
14	Future Now	C2	16	Software Development	32
23	Hilbert Computing	50	24	Solution Technology	50
	IBM Warp	41-43	39	Solution Technology	64
28	Indelible Blue Inc.	54	8	Sundial Systems Corp.	16
27	Iomega	53	4	Sytron	8
3	Lotus	6	42	The Software Lifeline	64
11	Manufacturers Rep	64	33	Tritus Inc.	69
34	MSR	71	35	Wall Data Inc.	C3
29	Mitnor Software	58			

The information on this page is provided as a service to our readers. The publisher will assume no liability for errors or omissions.

NEW for OS/2 Warp®

State of the Art Data Compression Tools and Utilities Get You Productive FAST

HPFS, FAT, Removable Media—
Even LAN Support

TWICE THE
SPEED OF
EARLIER
VERSIONS!

DCF/2, VERSION 1.4

(Warp® Update)

Full package: \$149.95

Update only: \$24.95

- Improved disk checking — up to 3 to 4 times faster
- New Startup Manager

VIRTUAL DISK SAMPLER

\$19.95 each

- 5 Ready-to-use Virtual Disks filled with a variety of popular objects and utilities from the public domain
- Shipped on a single diskette and accessible instantly — on-the-fly
- Titles include: OS/2 Icons, OS/2 Bitmaps & Backgrounds, OS/2 Fun Stuff, OS/2 Must Have Utilities, and OS/2 Convenience Utilities

SPECIAL OFFER: Order Your Copy of the DCF/2 Warp Update before December 31, 1994 and Receive a Virtual Disk Sample FREE!

CALL (800) 666-4672 or (303) 484-2665,

FAX (303) 484-2670. CIS 71333, 2765

Proportional Software, 1717 Linden Lake Rd.,
Ft. Collins, CO 80524

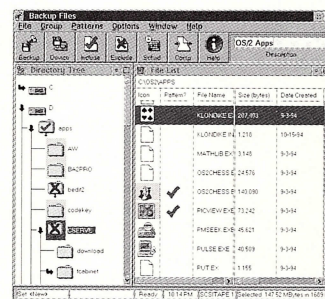
Reader Service No. 43

Back Again/2

Simply the best backup software
for OS/2 Warp!

Featuring:

- ▶ 32 - Bit
- ▶ HPFS Support
- ▶ Extended attributes
- ▶ Compression
- ▶ Built-in scheduler
- ▶ Command line restore utility
- ▶ SCSI tape, Floppy disk, LAN



**Satisfaction
guaranteed!**

Back Again/2 Pro \$149.00
Competitive upgrade \$49.00
Back Again/2 Personal \$35.00

Price does not include shipping & handling

Call Today!

(612) 730-4156

Fax: (612) 730-4161
BSS: (612) 730-4157

Computer
Data Strategies*

PO Box 25123 Woodbury, MN 55125

Reader Service No. 31

OS/2 MAGAZINE JANUARY, 1995 65

THE DEFINITIVE Marketing Guide For Software Publishers

Whether you're a product, brand, or marcom manager, and whether you've just developed your first program, or you hold a dominant market position, the steps required to get your product into the hands of the end user are the same. And *The Product Marketing Handbook* is the only publication that details *all* the steps in getting your product recognized, accepted and widely sold.

In total, *The Product Marketing Handbook* is among the finest resources available to help you avoid mistakes and losses while showing you step-by-step how to increase sales and profits. It provides you with the competitive edge needed to launch and sustain your product in today's rough and tumble software marketplace.

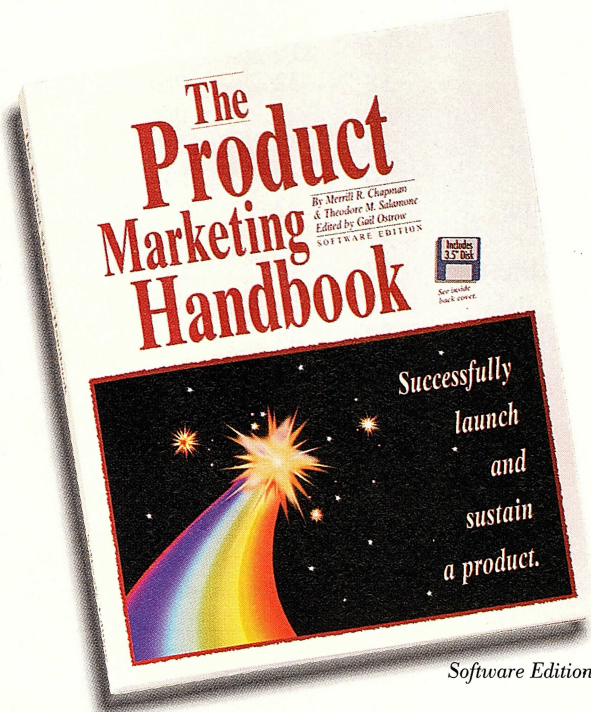
The handbook is a precise road map to success that includes:

- **Positioning, Pricing and Naming**
- **Channel Distribution**
- **Collaterals**
- **Public Relations and Product Review Programs**
- **Advertising**
- **Sales Promotions**
- **Direct Marketing**
- **Bundling**
- **Electronic Marketing**
- **Trade Shows**

True focus stories describe how industry winners triumphed and the decisions that led the losers to disaster. Each chapter concludes with checklists of action items that guide you into evaluating your particular circumstance, establishing objectives and measuring effectiveness.

About the author...

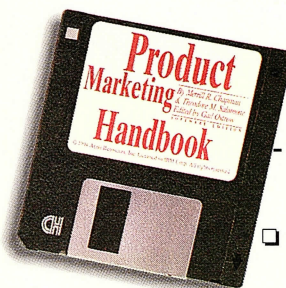
Merrill R. Chapman has been in the software industry for 15 years and has seen firsthand the brilliant marketing techniques employed by industry giants and the catastrophic errors made by companies that are no longer in business. He presently consults with and trains marketing professionals in companies that include IBM, DataEase, SUN, Berlitz and WordPerfect.



\$49⁹⁵

"This is the book that drives your bottom line. Its extensive use of checklists is designed to help the novice or professional plan, manage, and execute programs as well as evaluate the results. It takes you through the nuts and bolts of successfully launching and maintaining products via different promotional programs."

Bill C. Donovan
Brand Manager, IBM Corporation



Software publishing is one of the most competitive and highly lucrative industries in today's world. And you can't afford to be a player without a full and certain knowledge of *all* the facts contained in *The Product Marketing Handbook*.

Free Bonus Offer!

Order today and receive a **FREE** 3-month trial subscription to *The Ambit Group's Channel Compass*, a monthly guide to the latest trends in PC software channel marketing. A \$120 value!

To immediately receive your copy of *The Product Marketing Handbook* call

1-800-274-6204,

or fill out and mail the attached coupon to: **Aegis Resources, Inc., 35 Ridge Road, Stratford, CT 06497 U.S.A.**

For faster service, fax with credit information to **1-800-480-6151**.

For international orders call **1-203-380-8261**. International fax, **1-203-380-8263**.

☐ Please send me _____ copies of **The Product Marketing Handbook**.

☐ Each copy is \$49.95 U.S.* plus \$8.95 for shipping and handling (U.S. and Canada). Enclosed is a certified check or money order for _____. International shipping cost slightly higher.

☐ MasterCard ☐ Visa

ID 00:

Card #: _____ Exp. Date: _____

Name _____

Title _____

Company _____

Street Address _____

City _____

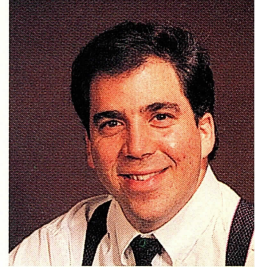
State _____ Zip _____

*Connecticut residents are required to add a 6% sales tax of \$3.00 per copy.

Aegis

Icons, Objects, and Shadows—what are they?

ONLY THE SHADOW KNOWS... BY DAVID REICH



OBJECTS AND ICONS

Q: I often hear the terms, “object” and “icon.” What are the differences between them and how do I tell them apart?

A: This question gets to the heart of the OS/2 Workplace Shell. The first order of business is to differentiate between icons and objects. An icon is a graphical representation of something on your computer. In other words, a picture. An object refers to a Workplace Object, which is part of the Workplace Shell and can be manipulated by dragging and dropping or by opening and closing. Objects are graphically represented by icons on your screen. Let’s look at the terminology and how it is used.

The terms icon and object are often used interchangeably. When you know the difference, you can understand what people mean even if they don’t use the terms correctly. An object is a Workplace Object, such as a program-reference object, data-file object, folder object, palette object, and so on. The term icon has come to refer to a minimized window. An “iconized” window is a minimized window. A minimized window is one that has been shrunk by a user action and, depending on the behavior defined

for minimized windows, will become hidden or minimized to an icon and placed in the Minimized Window Viewer or on the desktop. This minimized window, although more than just a picture, is represented by one that is commonly called an icon.

A Workplace Object should be referred to as an object. You might hear someone refer to a “folder icon” and intuitively figure out what is meant, but you can reply that a folder is an object, while an icon is just a minimized window that can be a view of an object or an application window.

SHADOW AND COPY

Q: What is the difference between a shadow and a copy of an object?

A: You might want to access objects from multiple places within your system. For example, you might use certain files across multiple projects and set these projects up in different folders. You might want objects that reference the same file in different folders for convenience.

A shadow functions exactly as its name implies, as a shadow of an object. If you have a data-file object that represents, for example, a spreadsheet, the data-file object

represents the real file. Remember, objects represent real things in the computer, such as printers, programs, files, and so on.

When you create a shadow of the data-file object or of any object, for that matter, you are creating an extra pointer to the object. It is important that you don’t use the word copy, because you are not copying the object. A shadow is a pointer to the same underlying structure (in this case the spreadsheet file) as the original. The key to understanding how shadows work is knowing that anything you do to the original happens to the shadow as well, because they point to the same thing.

A copy, on the other hand, is a copy operation in the pure sense. The object is copied and the link to the original is severed. You can duplicate an object and create a distinct set of settings for the new object without affecting the original.

For example, if you want to work with the same spreadsheet in multiple projects that have been set up in separate folders, it is convenient to use a shadow. Any changes made to the spreadsheet or the object are reflected when the object is referenced through the shadow. The copy, on the other hand, is a disjoint object that is manipulated independently from the original.

You can tell whether a particular object is a shadow by clicking the right mouse button on the object to

bring up the context menu. If you see a menu item for "Original," you know you're working with a shadow of an object. It is, however, difficult to determine whether an object you are working with has a shadow. But then again, why should you care? It wouldn't affect anything.

*.CHK FILES

Q: Every now and then, I see files with the extension *.chk* on my hard disk. How did they get there, what are they, and what should I do with them?

A: *.*chk* files are created by the CHKDSK program when a disk is checked and files with lost sectors or orphaned sectors are found. The CHKDSK program takes these fragments of files and uses their pointers and links to try to reconstruct as much of the files as possible. Once this reconstruction attempt is complete, CHKDSK creates a file with the extension *.chk*.

The only thing you can really do with these *.chk* files is bring them into an editor, try to see what they were part of, and possibly reconstruct or salvage the data. OS/2's CHKDSK operates the same way DOS's does.

CHKDSK might create these files if your disk has bad blocks or sectors, if the file system was shut down improperly, or if some errant application steps on the directory structure when booted under DOS. CHKDSK cleans up the directory structure and tries to help you recover the files—if possible.

WIN32S

Q: I have been using MathSoft Inc.'s MathCad DOS 2.5 at the DOS prompt in a DOS VDM. No native OS/2 version of this pro-

gram exists, so I inquired if I could use their Windows 4.0 version in a Win-OS/2 session. The answer was very discouraging:

"Unfortunately OS/2 2.1 is unable to run MathCad 4.0. MathCad 4.0 uses the Microsoft Win-32S Windows libraries. These allow MathCad to run as a 32-bit application under Microsoft Windows. OS/2 2.1 is unable to run any application that uses these libraries."

They go on to mention that IBM is considering a version that will be capable of running applications that use Win32S. Are they referring to OS/2 for Windows?

A: Not exactly. OS/2 2.1 and 2.11 can run Windows 3.1 applications, as can OS/2 for Windows. However, these versions cannot run applications requiring Win32S.

The newly released OS/2 Warp 3 can run Win32S applications, as well as the Windows 3.1 and 3.11 code and Windows for Workgroups. This release requires a copy of Windows 3.1, 3.11, or Windows for Workgroups to run Windows applications. As a result, OS/2 Warp 3.0 will run applications written specifically for Windows 3.1 or 3.11 (but no difference actually exists between the applications for these two versions), Windows for Workgroups (without the LAN functions), and the Win32S extensions under any of these versions. While OS/2 2.x did not have the ability to run Win32S code, OS/2 Warp can. You can now run your version of MathCad.

DUAL BOOT

Q: I've already installed OS/2 Warp, but I cleaned off my disk and did not have DOS and

Windows on the system before the installation. I want to go back and put DOS and Windows on my system and install Dual Boot. I don't want to install DOS and Windows and have to reinstall OS/2 Warp, but I want to add Dual Boot.

A: Earlier versions of OS/2 required that DOS and Windows were on your system before installing OS/2 to create a Dual Boot system. OS/2 Warp has been enhanced to allow the retrofitting of DOS (and Windows) if Dual Boot is desired.

If you've already installed OS/2 Warp, you can add DOS or Windows support (or both). At an OS/2 command prompt, type **boot /dos** and press <Enter>. The system will tell you that DOS is not installed. You can choose whether to abort or confirm that you want to install DOS. Of course, because you have no DOS system files installed, your system will not boot.

The system will attempt to reboot without an operating system, so if you place your DOS installation disk in the drive, you can continue and install DOS and Windows. After DOS is installed, type **boot /os2** and press <Enter>. Your system will boot back to OS/2. You now have a Dual Boot system.

ASSOCIATION EDITOR

Q: Can you tell me why the Notepad Editor automatically associates to any file with the *.txt* extension? I want all *.txt* files to associate with the OS/2 editor and have checked the association in *e.exe*. It is currently set to associate with any plain-text file and any file with the extension *.txt*.

A: When you migrated your Windows applets or your Windows desktop, it probably created the *.txt* association with the Notepad pro-

gram-reference object. If you do not want this association, just remove it from the program-reference object. Open the context menu for the notepad program-reference object by clicking on it with mouse button two. Select the Settings menu to bring up the settings notebook. (If you are not running OS/2 Warp, you will need to use the right arrow next to Open and select Settings to bring up the settings notebook.)

In the Settings notebook, go to the Association page and remove the *.txt association from the Current Names list box. Close the Settings notebook by double-clicking on the system icon in the upper left.

PREVENTING RESTART

Q: Sometimes, I shut down my system without closing all of the

running programs or closing open command prompts. They reopen or restart when I reboot my system. How can I prevent them from restarting every time I boot up?

A: You can use the setting in *config.sys* called **SET RESTARTOBJECTS**. Another key line in *config.sys* is **SET AUTOSTART**. By default, when you install the system, this line reads as shown in Fragment 1.

Fragment 1: SET AUTOSTART.

```
SET AUTOSTART=PROGRAMS,TASKLIST,FOLDERS,CONNECTIONS,LAUNCHPAD
```

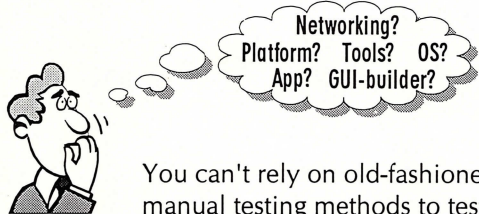
Fragment 2: SET RESTARTOBJECTS.

```
SET RESTARTOBJECTS=STARTUPFOLDERONLY
or:
SET RESTARTOBJECTS=NO
```

This line tells the system to start up any previously running programs and the task list, open any previously open folders, create network connections, and start the launchpad (for OS/2 Warp). This list is a "general" category of classes of objects or services that start when the system boots. You can modify this line so that only specific objects are opened, or you can add the line as shown in Fragment 2.

These two methods have their differences. If you remove the

If you're developing client/server systems, there's one more question you should be asking: How am I going to test them?



You can't rely on old-fashioned manual testing methods to test complex, client/server applications. You need to automate your testing with a tool designed for client/server. ATF is the tool-of-choice for over 100 corporations building client/server applications under OS/2, Windows, and NT. To learn more about ATF, call 617-576-2257. (Or FAX 617-864-7747.)

▲ ATF ▲ **The Softbridge
Automated Test Facility**

Softbridge, Inc. ▲ 125 CambridgePark Drive ▲ Cambridge MA 02140

Reader Service No. 32

32-Bit Editing Power!

Tritus SPF™

The OS/2 Text Editor that Brings the Power of the Mainframe to the PC!

Compatibility. Tritus SPF emulates ISPF/PDF including modifiable panels and keyboards. Plus, it supports many additional features such as Undo/Redo and highlighting. Tritus SPF is available for OS/2, DOS, and now for UNIX (IBM's AIX on RS/6000 machines).

REXX Macros. Write your own edit primary commands utilizing IBM's REXX in OS/2 or AIX and Tritus REXX in DOS. Tritus REXX and our ISREDIT superset of over 95 commands is included with the package. A REXX language book is optional.

Great product, I'm looking forward to version 2.0!
- Dale Stroyick, BMC Software

Great Deal. Tritus SPF is only \$125 which includes the DOS and OS/2 versions. Call for AIX pricing. Our sales Department can be reached toll-free at **1-800-321-2100**.

TRITUS

3300 Bee Caves Road, Suite 650
Austin, Texas 78746
(512) 794-5800, Fax (512) 794-3833

Reader Service No. 33

PROGRAMS entry from the **SET AUTOSTART**, no programs will be automatically started, including those in the Startup folder. If you simply want to prevent the programs that were running when you shut down from restarting, you can use the line shown in Fragment 3.

A: The Resource Manager is a set of code that manages device-driver resources and works with the OS/2 base device drivers. An associated program, called **RMVIEW**, comes with the system. **RMVIEW** is used to resolve conflicts with hardware on your system (such as IRQ con-

planar chipset devices.

/D displays the device drivers that have registered with the Resource Manager as well as the physical resources and logical devices they claim.

/D1 displays the device drivers with planar chipset devices.

/L displays the logical view of the system resources.

/R displays raw data. When this switch is used with **/P**, **/P1**, **/D**, **/D1**, or **/L**, the resource manager data is displayed in a lower-level format.

/IRQ displays the claimed interrupt levels (IRQ) sorted by value.

/IO displays the claimed I/O ports higher than 100 Hex sorted by value.

/IOA displays all claimed I/O ports sorted by value.

/DMA displays the claimed DMA channels sorted by value.

/MEM displays the claimed memory regions sorted by value.

/SO displays **/IO**, **/IOA**, **/IRQ**, **/DMA**, and **/MEM** sorted by owner.

/HW displays the hardware tree—the hardware topology of the system.

/? displays the help text.

David Reich, a contributing editor for OS/2 Magazine and author of Designing OS/2 Applications, has been with the OS/2 development team since 1987. Questions can be addressed to David via CompuServe 76711,632 or Internet speedracer@vnet.ibm.com.

Fragment 3: STARTUPFOLDERONLY.

```
SET RESTARTOBJECTS=STARTUPFOLDERONLY
```

Listing 1: The syntax of RMVIEW.

```
RMVIEW _____|
|___ /P ___| .
|___ /P1 ___| .
|___ /D ___|___ /R ___|
|___ /D1 ___| .
|___ /L ___| .
.
|___ /IRQ ___| .
|___ /IO ___| .
|___ /IOA ___|___ /SO ___|
|___ /DMA ___| .
|___ /MEM ___| .
.
|___ /HW _____|
|___ /? _____|
```

Only the programs in the startup folder will be restarted. In essence, the **SET RESTARTOBJECTS** is an override for the **SET AUTOSTART** entry for programs. If you do not have **PROGRAMS** in the **SET AUTOSTART** list, **SET RESTARTOBJECTS** does nothing for you. No override will selectively open folders or other types of objects on system startup.

RESOURCE MANAGER

Q: I have heard about the Resource Manager in OS/2 Warp. What is it and how do I use it?

licts) when installing OS/2 or a new device on an existing system. Because it is not in the documentation, I have shown the syntax of **RMVIEW** in Listing 1.

All the parameters are optional. If no parameters are entered, **RMVIEW** defaults to the physical view that can also be specified with the **/P** parameter.

/P displays the physical view. If no parameters are entered, **/P** is the default view. The physical view displays the physical components in the system, such as adapters and the resources claimed by the physical components.

/P1 displays the physical view with

End Notes cont'd from p. 72

presented applies equally to OS/2 2.1 and OS/2 for Windows may not be obvious to suspicious neophytes. But, even the latter will gasp to read: "since the full operating system can take over 30MB RAM, the installation program will prompt you to determine which components to install" (p. 17).

Zack also skimps on the High Performance File System (HPFS): "in this book, we will concentrate on the use of the FAT file system. This is because we assume that the majority of you are migrating to OS/2 from DOS or Windows. Therefore, you will most likely prefer to use the DOS-compatible FAT file system." Later on, in Chapter 5, an excellent account of the OS/2 architecture, Zack has a paragraph on the pros and cons of using HPFS. This topic really belongs in the earlier installation sections. Figure 2.9 in Chapter 2, "Installing OS/2," shows the Setup and Installation screen where the HPFS option is offered, but the adjacent text simply says "...you may be prompted for additional information."

My installation went quite smoothly but, alas, revealed several deficiencies in *The OS/2 Handbook*. To me, "handbook" implies a comprehensive guide and reference, which in turn demands an accurate index. My first index hunt was for mono graphics (my notebook being of that persuasion), which directed me to pp. 354 and 356. Neither page has any mention of the target subject. Next, I looked up PCMCIA without success. This non-entry is, in fact, reasonably correct! Fig 2.9 does show the option "PCMCIA Support" in the "Setup and Installation" screen, but the text provides no guidance. Similarly, when I was getting rubbish prompts in my DOS window, I found no index help under *ansi.sys*. The index entry for HPFS cites p. 181, which I read thrice in vain.

A front-cover decal declares that this book is "totally updated for all new OS/2 versions." This boast is surely misleading because the shops are unlikely to pull the book off the shelves when OS/2 Warp arrives. The front cover should say "Updated for OS/2 2.1 and OS/2 for Windows," so that potential buyers know exactly what to expect. Even so, the update betrays signs of haste. Tighter editorial control would have spotted misleading statements, such as "Incidentally, two of the things that you do not necessarily have to have space for on your hard disk are DOS and Windows. OS/2 has support for them built in." You'll find a one-page description of OS/2 for Windows in Chapter 1, OS/2 Versions, and several references to it elsewhere, none of which are indexed.

To sum up: a good, informative book is struggling against slack

editing, inadequate indexing, and poor layout. The look'n'feel is especially disappointing, considering other Van Nostrand Reinhold OS/2 titles, such as *Using WorkPlace OS/2*, which I reviewed in my November, 1994 column.

Stan Kelly-Bootle started computing on EDSAC I at Cambridge over 40 years ago and has written at least 11 books. His "Devil's Advocate" column in UNIX Review has been running since 1984. His Computer Contradictionary will appear in the MIT Press Spring, 1995 catalog. He welcomes e-mail via CompuServe 70323,1560 or Internet skb@crl.com.

RESOURCES:

The OS/2 Handbook, Second Edition - Applications, Integration and Optimization by William H. Zack (\$34.95)

Van Nostrand Reinhold
New York

READER SERVICE NO. 185

An unbeatable combination!

PM Patrol™ 3.0 - Unlock the full power of OS/2 with the help of this program

While you are using your PC

- Display current time, drives online, print queues, swap file size, and other selectable functions.
- Track cpu and RAM utilization for each process & individual thread.
- Terminate unwanted processes, schedule backups and other tasks.
- LAN administrator and software development features include data collection facility and API interface for custom embedded applications.

Now Available

Eliminate the mystery of multitasking operations!

BackMaster™ 1.1 - Protect your information investment with multi-thread OS/2 tape backup and restore/disaster recovery

When you are finished using your PC

- Interchange DOS, Windows and OS/2 data.
- QIC 40/80 Internal and selected Parallel Port drives drives supported*
- Boot from floppy disk to restore entire system

Rest assured knowing your data is safe and restoration is easy!

*contact MSR or your local dealer, distributor for current tape drives supported
• now offering BackMaster data cartridges and systems

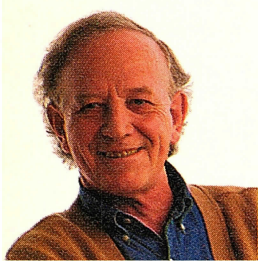
USA Master Distributors	
Indelible Blue	Micro Central
919-878-9700	908-257-7890
800-776-8284	800-83-MICRO

MSR Development

Phone: 409-564-1862 FAX: 409-560-5868 BBS: 409-560-5970

EDITORS' CHOICE AWARD
OS/2
MAGAZINE
1994

Reader Service No. 34



OS/2 Handbook Benchmark

THE OS/2 HANDBOOK, SECOND EDITION BY STAN KELLY-BOOTLE

In this month's column, my critical laser-beam is directed at *The OS/2 Handbook, Second Edition - Applications, Integration and Optimization* from Van Nostrand Reinhold. The book is by William H. Zack, esteemed founder of the New York OS/2 Users Group, which prompts the question: is there some strange OS/2 attraction for people with a leading Z in their last names? We have William Zack, Will Zachmann, Mark Zudeck, and, of course, our own esteemed Editor-in-Chief, Alan Zeichick. Just to name four at random. Hardly a coincidence, as Arthur Koestler used to say.

Zack's updated *OS/2 Handbook* arrived just as I was preparing to install OS/2 for Windows on one of my notebooks. I therefore decided to play the zero-knowledge game (not that difficult) and benchmark his Chapter 2, "Installing OS/2." After all, few of us get to install OS/2 as a regular thrill, so it's more a question of the forgetting curve than the learning curve. Incidentally, contrary to popular usage, a *steep* learning curve is good (high rate of knowledge acquisition), it's the steep forgetting curve that should bother us.

The target of my upgrade was a Packard Bell Diplomat with 170MB hard drive, 8MB RAM, and two PCMCIA sockets. That this setup, costing approximately \$2,000, comes complete with a 14,400 bps fax/modem no bigger than a credit card, and fits in my briefcase is a constant source of wonderment. The building-sized EDSAC I cut my bit-teeth on in the 1950s had a total

**I find it
amusing that the
fastest-growing
Windows applications
market is the
"uninstalling"
segment.**

memory of 512 words. The good news was that each word was 36 bits and the paper-tape mass storage was cheap and potentially infinite! You kids are spoiled rotten—but enough of this soggy neuralgia.

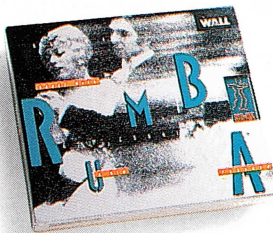
The PB Diplomat arrived at no extra cost (so they say) pre-infested with the Windows 3.1 and DOS 6.0 viruses and diverse disk-hogging utilities, such as Microsoft Works (which took some mighty works to remove). I find it amusing that the fastest-growing Windows applications market is the "uninstalling" segment. The PB sported a pathetic 4MB RAM, so my first pre-OS/2 chore was to add some LebensRAM. Here, I met the downside of current PC marketing. The PB Diplomat manual said "expandable to 20MB RAM," but when I tried to order this maximum upgrade, I was told that I could add only 4MB for a total of 8MB. Someone is lying and I intend

to uncover the miscreant and sue, sue, sue, just as soon as Shapiro and Dershowitz are free to take the case. By then, of course, OS/2 Warp 5 will be available and running in 640K.

Installing OS/2 is not only the sort of quirky, take-a-deep-breath task where you welcome all the help you can find, it's also a major challenge for OS/2 book writers. Can they improve on the comprehensive, albeit stodgy, IBM documentation and (nudge, nudge) justify a book price that often exceeds the cost of the product being explicated?

Zack admits upfront that installing OS/2 is a complex operation, but explains carefully how this is inevitable, given the power, sophistication, and flexibility of OS/2. (In which case, why are we asked to add *known* lines to the DOS *config.sys* and *autoexec.bat* files? The crudest shareware has no qualms about modifying these precious files!) After outlining the three boot options (O Sole Mio OS/2, Dual Boot, and Boot Manager), Zack boldly prunes the instructional tree by assuming "the conservative approach presented by the Dual Boot option." If you prefer Boot Manager, you are directed to a rather skimpy four-page appendix with a section that begins "before installing OS/2 2.0 make sure that..." I wonder how many potential readers are at the point of installing OS/2 2.0? Careful editing would have removed this and similar anachronisms from a 2nd edition published in 1994. The fact that much of the information

End Notes *cont'd* on p. 71



This is the time to catch your breath.

Because while Communications Manager/2 will keep your OS/2 system true Blue, it'll also keep you crying the blues about host interaction—with complicated setup, just plain boring displays, and virtually no connections with your PC-based programs.

RUMBA® for the Mainframe OS/2, on the other hand, gives you direct, friendly, easy access to all your host applications.

YOU CAN KEEP WAITING FOR IBM TO OFFER A VERSION OF CM/2 THAT DELIVERS EASY HOST-TO-OS/2 CONNECTIVITY. OR YOU CAN RELAX.

For instance, with RUMBA for the Mainframe OS/2 you can link host data to OS/2 or Windows applications for automatic update.

Tie Hotspots to host text for running point-and-click macros.

Run macros or workstation applications from the QuickStep

pad. Do drag-and-drop file transfers from the OS/2 Workplace Shell. And customize host application displays for a true OS/2 look, feel, and operation.

Plus, you get resident APPC, CPI-C, EHLLAPI, TCP/IP, and Novell SAA Gateway support. A convenient graphical floating toolbar. And a user interface that's the same for OS/2, Windows, and NT operating systems.

So whether you currently use CM/2 or are thinking about installing it, if you're looking for productive host-to-OS/2 connectivity don't hold your breath. Speak out.

Call **1-800-48-RUMBA**. Get your free demo disk or evaluation copy. And hook up with the one host-to-OS/2 connectivity program that lets you breathe easy.

RUMBA for the Mainframe OS/2.
From Wall Data...naturally.



Wall Data, 11332 N.E. 122nd Way, Kirkland, WA 98034-6931, (206) 814-9255
Fax (206) 814-4344 ©1994 by Wall Data Incorporated. All rights reserved. RUMBA®
and the Wall Data logo are registered trademarks of Wall Data Incorporated. All
other product names and trademarks are the property of their owners.

USE IT

The **GammaTech Utilities** are designed to enhance and complement your OS/2 system. These utilities provide the ability to perform vital maintenance and recovery operations easily without extensive technical knowledge. Use **GammaTech Utilities** for your critical data or you might lose it.

GAMMA TECH™

Utilities for OS/2

NEW!
\$99.00*
3.0 VERSION

- Undelete Erased Files
 - Optimize HPFS and FAT Volumes
 - Backup INI and Desktop Files
 - Recover HPFS Volumes
 - Protect and Backup Boot Sectors
 - Identify and Mark Bad Sectors
 - Reconstruct Boot Sectors
 - Protect/Lock Files
 - Permanently Erase Sensitive Data
 - Disk Sector Edit (ASCII or Hex)
 - Alter File Attributes
 - Display File Fragmentation
- NEW-3.00 version features:
- Support for large disk drives (>2 GB)
 - LAN Server 4.0 HPFS 386 Support
 - Backup Super Block and spare blocks
 - Automated HPFS Disk Optimization
 - Graphic Disk Map
 - Plus 200 other enhancements!

(405) 947-8085



(405) 632-6537 fax



SofTouch Systems, Inc., Workstation Division

1300 S Meridian, Suite 600, Oklahoma City, Oklahoma 73108

*Special Price good through March 31, 1995 MSRP: \$149.00

For OS/2 Version 2.1 or 3.0

Specialists Since 1989

